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COMPARISON OF THREE METHODS OF TEACHING READING IN THE SECOND GRADE.

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A CONTINUATION OF A FIRST-GRADE STUDY OF THREE APPROACHES TO BEGINNING READING AND OF THEIR EFFECT ON GROWTH IN COMPREHENSION AND INTERPRETATION SKILL IS REPORTED. THE BASAL, THE MODIFIED LINGUISTIC, AND THE LINGUISTIC APPROACHES WERE STUDIED. TWENTY-ONE SECOND-GRADE CLASSROOMS IN THREE CENTRAL NEW YORK SCHOOL DISTRICTS PARTICIPATED IN THE EXPERIMENT WHICH LASTED 140 DAYS. THE COMMUNITIES IN WHICH THE EXPERIMENT TOOK PLACE AND THE MATERIALS USED ARE DESCRIBED. READINESS, INTELLIGENCE, AND ACHIEVEMENT TESTS WERE ADMINISTERED. ANALYSES OF VARIANCE AND COVARIANCE WERE USED TO ANALYZE THE DATA. THE PARAGRAPH MEANING SCORES OF THE STANFORD TEST WERE NOT SIGNIFICANTLY DIFFERENT AMONG THE GROUPS. THE MEAN SCORE OF THE LINGUISTIC GROUP WAS SUPERIOR ON ORAL READING COMPREHENSION. NO DIFFERENCE WAS FOUND WHEN WRITTEN COMPOSITIONS WERE ANALYZED. THE GROUPS DID NOT DIFFER IN ATTITUDES TOWARD READING. THE TREATMENTS APPEARED TO BE EQUALLY SUCCESSFUL FOR BOYS IN BOTH HIGH AND LOW ABILITY RANGES. THE TREATMENTS WERE EQUALLY EFFECTIVE FOR GIRLS AT ALL THREE LEVELS OF ABILITY. ADDITIONAL RESULTS, CONCLUSIONS, A BIBLIOGRAPHY, AND AN APPENDIX ARE INCLUDED. (BK)

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COMPARISON OF THREE METHODS OF TEACHING READING IN THE SECOND GRADE

COOPERATIVE RESEARCH PROJECT NO. 3231

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OFFICE OF EDUCATION

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COMPARISON OF THREE METHODS OF TEACHING READING IN THE SECOND GRADE

Cooperative Research Project No. 3231

William D. Sheldon, Project Director
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1967

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CHAPTER I -- PROBLEM AND PURPOSES

During the 1964-65 school year a cooperative research project sponsored by the U. S. Office of Education and executed through the facilities of Syracuse University was carried out. The purpose of this study was to determine the relative effectiveness of three methods of beginning reading instruction on the achievement of first grade pupils. Again under the sponsorship of the U. S. Office of Education, this study was continued with the same children through their second grade year. The continuation of the study was felt to be necessary in order to make an unbiased evaluation of the effectiveness of two of the methods which are designed in such a way that they cannot typically be completed in grade one.

This study of reading instruction at second grade level was part of a larger cooperative effort sponsored by the U. S. Office of Education. Included in this larger effort were 14 studies of reading at this level. Each of these projects was a continuation of a sponsored study of first grade reading. These fourteen studies are coordinated through the Coordinating Center established at the University of Minnesota. At various meetings and conferences the project directors of the fourteen second grade studies agreed on common measures of achievement to be administered, common background data to be collected, and certain common procedures to be followed. In addition to the individual reports of each of the fourteen studies, a comprehensive analysis of the total data from the cooperating studies will be made and reported. This analysis will be done by the coordinating center research staff under the direction of Dr. Guy Bond and Dr. Robert Dykstra.

Problem

The three approaches to beginning reading under evaluation in this study are a typical basal reader approach to instruction, a modified linguistic technique, and a linguistic method. Bleismer and Yarborough, in their comparative study of first grade reading have classified the modified linguistic technique used here as a synthetic phonic approach.[1] The research available comparing the relative effectiveness of basal readers and a variety of phonic methods fails to provide unequivocal information as to the superiority of either approach. Very little controlled research exists which evaluates any purely linguistic method because of the very recent availability of teaching materials of this type.

Results of a year's controlled experimental study of the effectiveness of these three approaches at first grade level allowed certain conclusions to be drawn. Most children learned to read at a satisfactory level regardless of method of instruction. A few children did not progress satisfactorily in each of the three treatment groups. When mean achievement scores for the three experimental groups were compared no significant differences were observed. Significant differences were noted in three subtest means. Achievement in both accuracy and rate on the Gilmore Oral Reading Test favored the basal approach over the other two. The mean score of the Consonant Blends, Digraphs subtest of the Allyn and Bacon First Reader Test also favored the basal group. Though the differences in total achievement means were nonsignificant, the trends at the conclusion of grade one indicated that a possible superiority for the basal reader approach might be developing.

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[1] Emery P. Bleismer and Betty H. Yarborough, "A Comparison of Ten Different Beginning Reading Programs in First Grade," Phi Delta Kappan, XLVI (June, 1965), 500-504.

The modified linguistic (phonic) and the linguistic approaches used are designed to be completed in approximately two years. The possibility that continued work in these materials through second grade might result in important changes in relative achievement of the three experimental groups prompted continuation of the study through a second year. The possibility of a developing trend toward superior effectiveness of the basal approach was an additional reason for continuing the observations begun in the first year.

Purposes

1. To determine if any relative differences in achievement are apparent at the conclusion of grade two that were immeasurable at the conclusion of grade one which can be attributed to method of instruction.
2. To determine if any significant differences occur among mean scores on word study skills, word recognition, spelling, and comprehension tests of the three experimental groups which can be attributed to method of instruction.

3. To determine which method, if any, appears to be most successful as an instructional tool for either boys or girls of high, average, or below average ability under the conditions of this experiment.
4. To determine any significant differences between test scores resulting from method of instruction when pre-test scores of intelligence are held constant.
5. To determine which method, if any, produces significantly superior results when achievement levels of children as judged by pre-test results are held constant.

Definitions

1. Basal reader program -- the basic instructional material used by children in seven classrooms. The series chosen for use in this study was the Ginn Basic Reading Series by David H. Russell and others.[2] This was the series used in the first grade study.
2. Modified linguistic materials -- the basis for instruction in seven classrooms. The particular series chosen was the Structural Reading Series by Catherine Stern and others.[3] This material had been used as basic instructional material with one treatment group in first grade.
3. Linguistic readers -- the materials used for instruction in seven classrooms. The material chosen, as in the first grade study, was the Let's Read series by Leonard Bloomfield

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[2] David H. Russell and others, Ginn Basic Reading Series, (Boston: Ginn and Company, 1964).

[3] Catherine Stern and others, Structural Reading Series (Syracuse, New York: L. W. Singer Company, Inc., 1963).

and Clarence Barnhart.[4]

4. Reading Achievement -- measurement of reading skills as determined by the Stanford Achievement Test, Primary Batteries I and II[5] and the Gilmore Oral Reading Test.[6]
5. Mental ability -- the mental age as determined by performance on the Pintner-Cunningham Primary Test, Form A.[7]
6. Readiness -- that information on children which was derived from the Metropolitan Readiness Test,[8] the Murphy-Durrell Diagnostic Reading Readiness Test,[9] the Thurstone Identical Forms Test,[10] the Thurstone Pattern Copying Test,[11] and the Allyn and Bacon Pre-Reading Test.[12]
7. Listening-Viewing -- that procedure by which selected children were exposed to listening and viewing experiences through the use of a tape recorder, record player, a jack-box containing eight sets of headphones, a filmstrip projector, a small screen and filmstrips, records and tapes of both the commercially available type and teacher made variety.

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[4] Leonard Bloomfield and Clarence L. Barnhart, Let's Read (Bronxville, New York: C. L. Barnhart, Inc., 1963).

[5] Truman L. Kelley and others, Stanford Achievement Test, Primary I and II Batteries, (New York: Harcourt, Brace and World, Inc., 1964).

[6] John V. Gilmore, Gilmore Oral Reading Test (New York: Harcourt, Brace and World, Inc., 1952).

[7] Rudolph Pintner and others, Pintner-Cunningham Primary Test, Form A, (New York: Harcourt, Brace and World, Inc., 1964).

[8] Gertrude Hildreth and others, Metropolitan Readiness Tests, (New York: Harcourt, Brace and World, Inc., 1964).

[9] Helen Murphy and Donald Durrell, Murphy-Durrell Diagnostic Reading Readiness Test, Revised Edition, (New York: Harcourt, Brace and World, Inc., 1964).

[10] Printed for use in the 27 USOE First Grade Studies.

[11] Printed for use in the 27 USOE First Grade Studies.

[12] William D. Sheldon and others, Reading Achievement Tests, Pre-Reading Test, Form I, (Boston: Allyn and Bacon, Inc., 1963).

CHAPTER II -- REVIEW OF RELATED RESEARCH

The role of phonics instruction in beginning reading has been debated for many years. Opinions of experts in reading and peripheral fields are consistent only in their diversity. Reports of controlled research reveal conflicting results. Witty and Sizemore[1] reviewed approximately thirty studies conducted between 1912 and 1954 that were related to the value of phonics at different levels of instruction. Of these thirty, half were inconclusive in their results. Twelve provided evidence supporting the value of phonics. No study reviewed gave clear cut evidence of the role phonics should play in primary reading instruction.

The debate on how, when, and by what methods phonics should be presented was intensified in 1955 by the publication of Why Johnny Can't Read by Rudolph Flesch.[2] In it he attacked American reading instruction on the basis that only a whole-word approach was being used in teaching children to read. He advocated, in its place, the teaching of beginning reading based on only one skill -- phonics. His book also included a series of seventy-two lessons in phonics designed to teach the young child to read.

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[1] Paul A. Witty and Robert A. Sizemore, "Phonics in the Reading Program: A Review and an Evaluation," Elementary English XXXII (October 1955), 355-71.

[2] Rudolph Flesch, Why Johnny Can't Read (New York: Harper and Brothers, 1955).

In response to Flesch's comments and other similar criticisms the Carnegie Corporation of New York sponsored a conference during the fall of 1961. This meeting was held at the request of James B. Conant and was attended by twenty-eight well known educators and writers on reading instruction. The report of this conference was published in the booklet entitled Learning to Read, which included a lengthy statement concerning the place of phonics in the total reading program.[3] This statement was approved by twenty-seven of the conference participants. The one dissenting individual submitted a separate opinion, included in the publication, in which increased emphasis on phonics instruction was urged.

Artley, in an article appearing in Education in 1962 expresses his opinions on the role of phonics in primary reading instruction.[4] He describes one intensive synthetic method of phonics instruction, the Hay-Wingo, Reading With Phonics material. He then describes, erroneously, the Bloomfield-Barnhart Let's Read materials as a second phonics approach. He fails to identify the differences between this linguistic approach and a phonics approach and mistakenly describes its method as one of "drilling the child on the sounds of letters and letter combinations." He then proceeds to describe accurately the integrated phonics approach common to typical basal reading series. His conclusion is, "If . . . one is concerned with word attack as a means to an end, the end being growth toward maturity in all aspects of interpretation, there is need for an entirely different approach and content." Artley by this statement was essentially rejecting phonic and linguistic approaches as methods that could provide for this maturity in all aspects of interpretation. One of the major purposes of the present study was to compare growth in comprehension and interpretation skills between groups of children receiving initial reading instruction in these three contrasting types of materials.

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[3] Learning to Read: A Report of a Conference of Reading Experts (Princeton, New Jersey: Educational Testing Service, 1962).

[4] A. Sterl Artley, "Phonic Skills in Beginning Reading," Education, (May, 1962), 529-32.

In addition to publications of opinion one also finds many studies done within the last twelve years exploring the value of phonics in the beginning reading program. Russell and Fea state that "more has been written on phonics in the past five years than any other aspect of the teaching of reading."[5] The problem of uncontrolled variables makes it difficult to select pertinent studies from this collection.

Sparks and Fay[6] conducted a longitudinal study comparing the effects of a basal reading program and an intensive phonetic approach. They evaluated the achievement of children taught by one of these two approaches at the end of grades one, two, and three and again during grade four. Results at the end of first grade showed that children taught by the phonetic approach were achieving at a higher level in reading vocabulary than the control group. At the end of second grade this experimental group achieved higher scores in reading comprehension than the control group. The initial superiority in word recognition was no longer evident. At the end of grade three and during grade four no significant differences were found between the basic reader and intensive phonetic groups. The authors concluded that the basic reading program introduced enough phonetic training to provide the child with the word attack skills necessary to success in reading at this level.

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[5] David H. Russell and Henry R. Fea, "Research in Teaching Reading," Handbook of Research on Teaching, N. L. Gage, editor (Chicago: Rand McNally and Co., 1963), 875.

[6] Paul E. Sparks and Leo C. Fay, "An Evaluation of Two Methods of Teaching Reading," Elementary School Journal LVII (April, 1957), 386-90.

Another three year study designed to compare the effects of a phonetic program and a "traditional approach" was carried out by Henderson.[7] She reported results at the end of grade three which significantly favored the phonetic group in all criteria. Her results include an examination of the mean scores of four different well known tests which produced a total of fourteen scores. Ten of the mean differences were found to be significant at the .01 level and the remaining four were significant at the .05 level.

It is difficult to determine the exact nature of Henderson's experiment because of the lack of information on the "traditional approach." Materials and methods used in the control classes were not identified nor defined. Furthermore, the comments of the experimental teachers indicated that a great deal of extra effort and enthusiasm prevailed in the experimental classes. No mention was made of the activities or the attitudes exhibited by teachers of the control classes.

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[7] Margaret G. Henderson, Progress Report of Reading Study: 1952-1955 (Champaign, Illinois: Community Unit School District No. 4, no date).

Bear conducted a study which evaluated a synthetic phonics program and an analytic phonics method.[8] Both control and experimental groups followed the same basal reader program. The method of introducing phonics was the experimental variable. The control group was taught the analytic phonics program of the basal reader according to procedures outlined in the manual. The experimental, or synthetic phonics, group experienced phonic instruction from a phonics reader, phonics workbooks, and picture cards for a thirty minute period daily. The total time spent in daily reading and phonics instruction was the same for both groups.

At the end of the first semester of grade one the two approaches were found to be equally effective. By the end of grade one, however, the testing program indicated that children in the low and middle ability groups using the synthetic phonics approach achieved higher scores. Children of high ability achieved equally well in both experimental and control groups.

Bear[9] was able to follow up and evaluate the achievement of the children in this study at the end of grade six. All children had received the same basal reader instruction after grade one. At the end of grade six results of the Gates Reading Survey favored the experimental, or synthetic phonics, group on all subtests. Only the vocabulary subtest showed a significant difference at the .05 level, however. Two tests of spelling indicated superiority at the

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[8] David E. Bear, "Phonics for First Grade: A Comparison of Two Methods," Elementary School Journal, XLIX (April, 1959), 394-402.

[9] David E. Bear, "Two Methods of Teaching Phonics: A Longitudinal Study," Elementary School Journal, LXIV (February, 1964), 273-79.

.01 level for the experimental group. Bear's original group contained 136 children. Of this group only ninety children were available for study at sixth grade level. There is the possibility that the selective effect resulting from children repeating one or more grades could have biased his findings.

Bloomer compared the achievement of two first grade classes at the end of one year of instruction.[10] The control group in this study followed a regular basal reading program for the entire year. The experimental class alternated formal phonic instruction and basal reading instruction. That is, after a reading readiness program from a basal reader, formal phonics lessons were taught for sixteen weeks. This, in turn, was followed by eight weeks of instruction in the basal reader series. The phonics program in the basal reader was not taught to the experimental group. Reported results indicated significantly superior performance in word recognition and sentence reading for the experimental group. Bloomer concludes by stating that formal phonics training prior to the usual basal reader instruction produces the superior results found in this study.

Kelley performed a post-hoc study on the achievement of 100 pairs of second grade pupils equated on the basis of mental age.[11] One member of each pair had received reading instruction from the Scott, Foresman Basal Series. The other group had received intensive phonics instruction alternated with work in basal readers. The Economy Materials had been used for the phonics instruction. Kelley found differences significant beyond the .001 level favoring the phonics group for mean reading achievement.

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[10] Richard H. Bloomer, "An Investigation of an Experimental First Grade Phonics Program," Journal of Educational Research, LIII (January, 1960), 188-193.

[11] Barbara Cline Kelley, "The Economy Method Versus the Scott, Foresman Method in Teaching Second Grade Reading in Murphysboro Public Schools," Journal of Educational Research, Vol. 51, (February, 1958), 465-69.

Duncan has reported a similar study in which his experimental group received phonics instruction supplemented by basal reading instruction in a program comparable to the ones discussed by Bloomer and by Kelley.[12] Results were evaluated by comparing median scores on the Metropolitan Achievement Tests at the end of grades two and three. All differences favored the experimental group. The most significant areas of difference noted by Duncan were in the reading comprehension and language scores, with the major differences occurring in the average and above average groups of children.

A fourth study comparing this same phonic method alternated with a basal approach is reported by Morgan and Light.[13] These investigators report achievement at the end of the third grade. Two classes had used the formal phonic approach prior to the basal reader for three years. Two control classes had used the basal approach as detailed in the manuals for three years. The children were given the *Gates Basic Reading Test*, the *Durrell-Sullivan Spelling Test* and the *California Achievement Test* at the end of grade three. Analysis of variance showed two significant differences on the Gates variables. Results of the Reading Vocabulary and Reading Comprehension were significantly in favor of the children instructed in the basal reading program only. The *California Achievement Test* showed highly significant differences favoring the basal group on Reading Vocabulary, Reading Comprehension, and Total Achievement. Both the *Durrell-Sullivan Spelling Test* and the spelling subtest of the *California Achievement Test* showed non-significant differences between the two groups in spelling skill.

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[12] Roger L. Duncan, "What Is the Best Way to Teach Reading?", School Management, Vol. 8 (December 1964), 46-47.

[13] Morgan and Light, "A Statistical Evaluation of Two Programs of Reading Instruction," Journal of Educational Research, LVII (October, 1963), 99-101.

The authors concluded that a formal phonic approach as used in this study could not be claimed to be superior to a basal approach. Neither could it be claimed to be damaging in any way as the means of both experimental and control groups were well above national norms on the tests used.

Cleland and Miller explored the relation of instruction in phonics to success in beginning reading. They compared reading achievement of equated groups of first graders using a basal reader unsupplemented and the same basal reader supplemented by a concentrated phonetics program. The *Metropolitan Achievement Test* was used to evaluate achievement. Differences in the achievement of the two groups were slight and the authors concluded that neither approach could be demonstrated to be superior. Two subtest scores showed superiority in achievement at the .05 level for boys. Boys in quartile two of intelligence rating who had received the supplementary phonics instruction showed superiority in spelling achievement. The total group of boys in this same instructional group showed higher achievement in the Word Knowledge subtest of the evaluating instrument.[14]

Rudisill has made a comparison of reading and spelling skills of an experimental group of first graders using a "newly developed combination phonic and sight-context-reading approach."[15] She reports progress for her two experimental groups at approximately double the expected rate. Rudisill gives no description of her population except that one group was classified as average in intelligence and the other high average. No control group was used. Rate of progress was assessed by comparisons with national norms for the testing instruments used. No discussion of the comparability of the experimental and the norm group was given.

An investigation conducted by Sweeney explored the relative effectiveness of the Phonovisual phonics method and phonics taught as directed in a basal reader program at second grade level.[16] In addition to the regular reading instruction both experimental and control groups were allowed fifteen minutes of supplementary phonics daily. At the end of grade two the experimental Phonvisual group achieved higher mean scores on tests of word attack skills and spelling constructed by the investigator. No indication is given in Sweeney's discussion of any significance in differences between the mean scores. However, he concludes the Phonovisual approach to be "undoubtedly superior" to the basal approach.

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[14] Donald L. Cleland and Harry B. Miller, "Instruction of Phonics and Success in Beginning Reading," Elementary School Journal, (February, 1965), 278-82.

[15] Mable Rudisill, "Sight, Sound and Meanings in Learning to Read," Elementary English, XXXI (October, 1964), 622-630.

[16] John R. Sweeney, "An Experimental Study of the Phonovisual Method of Teaching Phonics," Ontario Journal of Educational Research, VII (Spring, 1965), 263-72.

McCollum reports results of two studies designed to compare the Carden Reading Program which has a strong emphasis on early phonics instruction, to the typical basal approach.[17] His first experiment compared two first grade and one third grade class using the Carden Method to three similar classes using a basal reader. He found no significant differences in the two groups at third grade level. At first grade level he noted a significant difference in achievement in favor of the basal group.

McCollum's second experiment involved two first grade classes using the Carden Method and two using a basal approach plus a variety of supplementary materials. Using the _Stroud-Hieronymous Primary Reading Profiles_ he noted differences at the .05 level of significance favoring the basal group on all subtests except word recognition. On this test achievement of the two groups was the same.

Tensuan and Davis report an interesting comparison of the methods in teaching beginning reading in a phonemically regular language, Tagalog.[18] They compared results achieved by a phonic method of word recognition and a typical basal method of teaching reading where a child is taught a combination of phonic, structural, context, and whole word methods of word recognition. In this phonemically regular language a wholly phonic method could be expected to demonstrate its maximum utility for the child. The investigators concluded at the end of two year's observation that no superiority could be demonstrated for the phonic approach. Slight, but non-significant superiority favored the combination method.

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[17] John A. McCollum, "An Evaluation of the Carden Reading Program," _Elementary English_, XXXXI, (October, 1964), 600-612.

[18] Emperatriz S. Tensuan and Frederick B. Davis, "The Phonic Method in Teaching Beginning Reading," _New Developments in Programs and Procedures for College-Adult Reading_, Ralph C. Staiger and Culbreth Y. Melton editors. Twelfth Yearbook of the National Reading Conference, 1963.

A recent study by Bliesmer and Yarborough compared the effects of ten different beginning reading programs on a population of 596 children in twenty classrooms.[19] Five of the programs represented an analytic approach as found in three basal reader programs and two individualized reading systems. The remaining five programs represented a synthetic phonics method of teaching beginning reading skills. Results of this study show that 92 out of 125 differences among achievement test means were found to be significant in favor of the synthetic phonics method. In only three cases were the differences found to favor the analytic approach. The authors also cite evidence to dispute the claim that a synthetic phonic approach does not give proper emphasis to the building of comprehension skills. In the area of paragraph reading they found that in twenty out of twenty-five instances significant differences were found favoring the synthetic phonics method while only one difference (not significant) was noted in favor of the analytic method.

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[19] Emery P. Bliesmer and Betty H. Yarborough, "A Comparison of Ten Different Beginning Reading Programs in First Grade," Phi Delta Kappan, XLVI (June, 1965), 500-504.

Tanyzer and Alpert studied the effects on the progress of first grade children resulting from instruction in basal materials using a highly analytical phonics approach emphasizing word structure and the phonetic characteristics of words. This method was compared for effectiveness with basal materials utilizing an eclectic approach to word recognition. Under this program the child is trained to use a variety of techniques of word recognition. Their results indicated at the conclusion of grade one that the pupils using the highly phonetic approach were achieving at a significantly higher level than the other group on a composite reading score and all subtests of the Stanford Achievement Test.[20]

Results reported by Sheldon and Lashinger of a controlled study of first grade reading made a comparison of achievement in seven classrooms receiving instruction in a basal reader and seven classrooms receiving instruction by a synthetic phonics method.[21] Exhaustive analysis of achievement at the end of grade one indicated that children achieved well by both methods. Neither method showed any superiority for instruction at first grade level.

Murphy designed a study to evaluate, among other things, the effect of a speech-based synthetic phonics program on beginning reading.[22]

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[20] Harold J. Tanyzer and Harry Alpert, "Three Different Basal Reading Systems and First Grade Reading Achievement," The Reading Teacher, XIX (May, 1966), 636-642.

[21] William D. Sheldon and Donald R. Lashinger, "Effect of First Grade Instruction Using Basal Readers, Modified Linguistic Materials and Linguistic Readers," Cooperative Research Project No. 2683, Syracuse University, Syracuse, New York, 1966.

She compared classes receiving instruction in a basal reader, a basal reader supplemented by daily lessons in Speech-to-Print phonics, and the basal reader supplemented by Speech-to-Print phonics plus seat work consisting of practices involving writing. Results measured by the Stanford Achievement Test showed that the early teaching of the speech-based phonics resulted in significantly higher achievement in reading and spelling at the end of grade one.

The results of the studies cited above can only lead to the conclusion that children can learn to read successfully by either a method which emphasizes a strong synthetic phonics base as the main approach to word recognition in beginning reading, or by the methods embodied in the basal reader approach which provides the child with skills in phonic analysis plus a combination of other word recognition skills. Neither approach has been demonstrated to be conspicuously superior under all conditions.

During the past six years there has been increased interest in the contributions that the science of linguistics may make to beginning reading instruction. A variety of new linguistically-based materials have recently appeared on the market. Several basal systems have modified their materials in light of the linguists' findings. Professional organizations such as the National Council of Teachers of English and the International Reading Association have provided workshops dealing with linguistics and reading at their annual conventions. In addition, professional journals are publishing a rapidly increasing number of articles dealing with this topic. Unfortunately, very few of these articles involve attempts at an objective evaluation of linguistically-based instructional materials in well-controlled, classroom experimentation. Rather, most comments have expressed the writer's opinion as he tried to explain the values or weaknesses of such materials.

One of the few reports of a beginning reading program using linguistic materials was presented by Goldberg and Rasmussen.[23] They attempted no formal evaluation of their program but they felt that their phonemic word approach was successful in teaching children in their school to read. Furthermore, they were more than satisfied with the pace at which the children learned.

Sister Mary Fidelia compared the effectiveness of the Bloomfield linguistic approach and a phonics program and found no significant differences between the mean scores of the control and experimental groups in the areas of total reading, paragraph meaning, and word meaning.[24]. However, she stated that a full evaluation of the Bloomfield approach could be made only after the children had completed the entire program. This program is usually completed at the end of second or beginning of third grade.

Another study compares a modified version of Bloomfield's linguistic approach and a basal reader approach to beginning reading.[25]

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[23] Lynn Goldberg and Donald Rassmussen, "Linguistics and Reading," Elementary English, XL (March, 1963), 242-247.

[24] Sister Mary Fidelia, "Bloomfield's Linguistic Approach to Word-Attack," (Unpublished doctoral dissertation, Department of Education and Psychology, University of Ottawa, 1959).

[25] Sister Mary Edward, "A Modified Linguistic Versus a Composite Basal Reading Program," Reading Teacher, XVII (April, 1964), 511-15.

Bloomfield's method was modified to the extent that some sight words were taught from the beginning. The subjects in this study received instruction in one of the two approaches for three years and analysis of data was done at the beginning of the fourth year of instruction. The findings show that:

> Although both samples performed above the national norms on all reading tests, the boys and girls of the experimental group recognized words in isolation more readily, used context with greater facility, had fewer orientation problems, possessed greater ability to analyze words visually and had greater phonetic knowledge than boys and girls taught with the control method. There was no significant difference between the two groups in their ability to synthesize words.[26]

It was found that all children benefited from instruction in the modified Bloomfield linguistic approach. However, low and average ability groups appeared to profit relatively more than did children of high ability in the experimental group. Unfortunately, no information was presented in this report on the achievement of the experimental and control groups at the end of grades one and two.

McDowell also reports achievement results of a group of fourth graders who had used a modification of the Bloomfield linguistic approach.[27] He compared results obtained by this group to results obtained by a group of fourth graders instructed by conventional methods. Comparisons were made on eight reading criteria. Of the eight, five showed no significant differences, one favored the linguistic group and two favored the conventional group. Apparently McDowell's population was equally successful with either method.

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[26] Ibid., p. 512.

[27] McDowell, Rev. John B., "A Report on the Phonetic Method of Teaching Children to Read," Catholic Education Review, LI (October, 1953), 506-519.

Sheldon and Lashinger included experimentation with the Bloomfield-Barnhart linguistic method of beginning reading as part of their study.[28] In comparing achievement of seven classes instructed with this technique to that of the seven basal and seven phonics classes no significant differences in achievement in reading skill could be demonstrated. It could only be concluded that children learned to read as well as, but no better, than children instructed by the other two methods. It is interesting to note that even though the Bloomfield-Barnhart method minimizes emphasis on comprehension the children instructed by this method were not significantly different in their ability to comprehend printed material than children instructed by the basal method where comprehension is systematically developed from the very beginning.

Davis reports on results of a study that essentially compares a linguistic approach as a supplement to a basal reader alone.[29] Davis' supplementary lessons are non-published materials described as a "phonemic structural approach," These materials were used with the experimental group for twenty-five minutes daily in addition to the regular basal instruction. The control group spent an equivalent amount of time on only the basal materials. Progress of the two groups was assessed by the Metropolitan Achievement Test. The experimental group was superior to the control group on word recognition at the .025 level of confidence at the end of grade one. Non-significant differences in achievement were observed in all other subtests. Results of testing at the end of grade two showed no differences in achievement between experimental and control groups.

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[28] Sheldon and Lashinger, Op. cit.

[29] R. C. Davis, "Phonemic Structural Approach to Reading Instruction," Elementary English, XXXXI (March, 1964), 218-223.

Schneyer studied the effects of a purely linguistic approach to beginning reading instruction. The instructional materials used were prepared by an outstanding linguist, Charles C. Fries. Schneyer's control group was instructed with a widely used basal reader. Achievement of the two groups was compared on the Stanford Achievement Test, and a linguistic reading test. Results showed the linguistic group to be superior on the linguistic reading test. The basal group was superior on the Stanford subtests for Word Reading, Spelling, and Word Study skills. High ability children of the basal group were superior to similar children in the experimental group on the Stanford Paragraph Meaning subtest. High and average children of the basal group achieved significantly higher on the Stanford Vocabulary subtest.[30]

Ruddell designed an experiment to compare achievement of first graders instructed in materials with regular phoneme-grapheme correspondences to achievement attained by first graders instructed by a basal reader approach where phoneme-grapheme correspondences are not controlled. The experimental material used is prepared by a linguist in programmed format. Ruddell concluded that the program containing the high degree of phoneme-grapheme consistency resulted in significantly higher achievement in word reading, word study, skills, and regular word identification scores than did the control method. This experimental method, when supplemented with special emphasis on language structure related to meaning, also resulted in significantly superior paragraph and sentence meaning scores. When this additional emphasis on language structure related to meaning was employed as supplement to the control program no facilitating effect on comprehension could be demonstrated.[31]

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[30] J. Wesley Schneyer, "Reading Achievement of First Grade Children Taught by a Linguistic Approach and a Basal Reader Approach," The Reading Teacher, XIX (May, 1966), 647-652.

The scarcity of controlled experimentation with linguistic approaches and the inconclusive evidence presented by the many phonics versus basal reading studies prompted the Sheldon and Lashinger study of first grade reading referred to above. The following chapter describes the research procedures employed in continuing the experimental study with the same children through their second grade year.

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[31] Robert B. Ruddell, "Reading Instruction in First Grade with Varying Emphasis on the Regularity of Grapheme-Phoneme Correspondence and the Relation of Language Structure to Meaning," The Reading Teacher, XIX (May, 1966), 653-660.

CHAPTER III -- PROCEDURES

Introduction

The study of reading at second grade level described in this chapter was one of fourteen such studies conducted during the 1965-66 school year. Each of these studies was a continuation of one of twenty-seven cooperative research studies done under the sponsorship of the United States Office of Education during the preceding school year.

Each of these studies has its own unique identity in that each explored a different aspect of primary reading instruction. By agreement of the individual directors involved certain common procedures were followed and certain common data were gathered. The common data will be analyzed and reported on by the project Coordinating Center at the University of Minnesota. The unique information obtained by each individual study will be reported individually.

The administrators and supervisors of the three school districts that participated in the first year of this study were eager to have the study continued for a second year. Their complete cooperation made it possible for the research staff to continue the treatment and observations begun in the first grade with the same children through second grade.

Selection of the Sample

Of the 467 children who made up the population of the First Grade Study, 376 were still available for participation in the second year of the study. Each of these pupils continued with the same instructional program he had had in first grade. At the end of their kindergarten year each of these children had been assigned to a teacher for first grade instruction following the usual administrative procedures of each district. Twenty-one teachers in twenty-one classrooms were involved. A table of random numbers was used to assign each teacher and her pupils to a treatment group.

At the second grade level each of these twenty-one classroom groups was still available for study. This time each class was assigned to a teacher according to the administrative procedures customarily used for assignment of classes by the building principal. In two classrooms the children continued through first and second grade with the same teacher. Both of these classes were receiving instruction in the linguistic materials. Each teacher in the study gave her full interest, cooperation and support to the study. Table I shows the distribution of classes from each school district within each treatment group.

TABLE I

ASSIGNMENT OF CLASSES TO TREATMENT GROUPS

	School Districts		
	A	B	C
Basal Reader Program	2	3	2
Modified Linguistic Materials	2	2	3
Linguistic Readers	3	2	2

Pre-Experiment Activities

A one-day workshop was held for all the participating second grade teachers the first week in September, 1965. The meeting was planned to elicit the interest and full cooperation of the teachers. Background information on the purposes and procedures that were followed during the first year were explained. The relationship of the present year's work to that of the preceding year was made clear. The part that the local study was to play in the larger cooperative research effort was discussed.

Specialists in the theory and use of each of the three types of material to be used as a basic instructional tool were present. The specialists worked with the teachers that would be using each of the materials to provide understanding of its unique features and methods of instruction. The philosophy and rationale of each program was explained. The materials to be used were displayed. Teaching procedures that would be most effective with each approach were discussed.

The role of the research personnel as observers and consultants was explained to the teachers at this meeting. Techniques and procedures to follow relative to the listening and viewing centers to be provided for each classroom were demonstrated.

The orientation provided by the representatives of the three programs was considered to be very necessary. The experience in teaching reading brought to the study by the twenty-one teachers was overwhelmingly basal reader oriented. Each of the other two approaches required the teacher to assume a new attitude concerning materials and rationale of the particular program to which they had been assigned. Even the two teachers who were continuing with the linguistic program were to be working at a different level than previously.

In-Service Activities

Three other in-service meetings were held during the school year for all participating teachers of each instructional group. Each of these meetings was held for one hour under the leadership of the research personnel. Procedures of the study relative to gathering test and other data were discussed. Time was provided for teachers to exchange ideas on instructional techniques they had found valuable. Teacher made materials for use with the listening viewing centers and for supplementing instruction in skill development were exchanged.

Testing

During September, 1965, all participating pupils were administered the Stanford Achievement Test, Primary I Battery, Form W.[1]

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[1] Truman L. Kelley and others, Stanford Achievement Test, Primary I Battery, Form W (New York: Harcourt, Brace and World, Inc., 1964).

Late in May, at the close of the instructional period the Stanford Achievement Test, Primary II Battery, Form W[2] was given to all pupils as a post-test measure of achievement.

A randomly selected sub-sample of fifty children from each treatment group had received, in addition to tests administered to all subjects, special testing at the end of the first grade instructional period. Each of these children who had participated in the study throughout the second grade instructional period was again administered a series of special tests. The tests administered to this sub-sample were the Gilmore Oral Reading Test,[3] the Fry Test of Phonetically Regular Words,[4] and the Gates Word Pronunciation Test.[5] Enough children were selected at random from each of the treatment groups to fill in any vacancies that had occurred in the sub-sample since grade one. Each child in the sub-sample was also required to prepare a writing sample. This sample was prepared in response to a standard stimulus story used by all cooperating second grade studies.

Additional pre-test data that had been gathered at the beginning of grade one was utilized in analysis of results in this study of second grade reading. This included data from administration of the Pintner-Cunningham Primary Test, Form A;[6] the Metropolitan-Readiness Test;[7] the Murphy-Durrell Diagnostic Reading Readiness Test;[8] the Thurstone Pattern Copying;[9] and the Thurstone Identical Forms Tests.[10]

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[2] Truman L. Kelley and others, Stanford Achievement Test, Primary I Battery, Form W (New York: Harcourt, Brace and World, Inc., 1964).

[3] John V. Gilmore, Gilmore Oral Reading Test, (New York: Harcourt, Brace and World, Inc., 1952).

[4] Printed for use in the U.S.O.E. Primary Reading Studies.

[5] Printed for use in the U.S.O.E. Primary Reading Studies.

Instructional Period

The instructional period under observation in this study was 140 school days extending from September, 1965, through May, 1966. During the instructional period a member of the university research staff was assigned to each of the three treatment groups. These people observed instruction in the classrooms daily on an unscheduled basis. This provided for observation of the reading instruction in each classroom every seven or eight days. This observation was felt necessary to assure that the materials were being used as they were designed to be used and that other conditions of the study were being met. These observers also provided assistance to the teacher in evaluating the achievement and instructional needs of individual pupils. Help was given where necessary in utilizing the listening and viewing center equipment and in planning or preparing teacher made lessons for use with this facility. During their observations the research staff members were alert to common problems that could be dealt with effectively in the periodic teacher group meetings.

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[6] Rudolph Pintner and others, Pintner-Cunningham Primary Test, Form A (New York: Harcourt, Brace and World, Inc., 1964).

[7] Gertrude Hildreth and others, Metropolitan Readiness Test, (New York: Harcourt, Brace and World, Inc., 1964).

[8] Helen Murphy and Donald Durrell, Murphy-Durrell Diagnostic Reading Readiness Test, Revised Edition (New York: Harcourt, Brace and World, Inc., 1964).

[9] Printed for use in the 27 U.S.O.E. First Grade Studies.

[10] Printed for use in the 27 U.S.O.E. First Grade Studies.

All three experimental groups of teachers received the same type, quantity, and quality of supervisory aid by the research staff. Throughout the instructional period all teachers were encouraged to use sound instructional practices. Special emphasis in all treatment groups was placed on working with children at their appropriate instructional level. This was achieved by flexible grouping, individualized help, and differentiated assignments.

Some of the children completed the materials for the modified linguistic and the linguistic materials before the end of the instructional period. The reading skills of these pupils were carefully assessed by a member of the research staff and recommendations were made for their placement at the appropriate level of the basal reading series being used as a standard instructional material in the pupil's school.

The daily instructional time for each of the experimental groups was one hour. Approximately one third of this time was spent in small group instruction under the direct guidance of the teacher. The remaining time was spent in supporting activities planned to reinforce specific reading skills, broaden concepts and to extend the child's pleasure in reading. Many attractive trade books, films, and records were provided for each classroom for these supporting activities. A period of thirty minutes per day in addition to the basic instructional time was recommended for free reading activities.

Teachers in all classrooms followed these recommended instructional times as closely as possible. Observations by the research staff indicated that in no case were these recommendations for instructional time violated to a significant degree in any treatment group.

Description of Materials

Each of the twenty-one treatment groups continued receiving instruction by the same method and with the same materials as in first grade. The Ginn Basic Readers[12] were used for basic instruction in seven classrooms. The Ginn program was chosen originally because it is one of the most complete of the basal approaches in terms of instructional and supplementary materials and guidance for teachers. It is very representative of the basal reader approach in terms of underlying philosophy and rationale.

The Ginn second year program provides for continued sequential development of word recognition and comprehension skills. The skills introduced in first grade are refined and extended. Greater emphasis is placed on phonic and structural analysis of words at this level. The approach to this instruction is essentially an analytic one in which the child uses known words as a basis for developing his auditory perception of sounds and then learns to associate this auditory image with the correct visual symbol within the structure of a known word. He then learns to extend the utility of these skills through analogy to unknown words.

The Ginn Basic Readers emphasize reading for meaning by systematic training in a wide variety of evaluating, comprehending, and organizing skills. Special guidance is provided for the teacher in utilizingeach story selection as a vehicle for developing those meaning skills most appropriate to the selection. Many workbook activities are constructed as follow-up reinforcement of each skill taught. The materials are constructed in a manner that provides systematic practice at spaced intervals for each comprehension skill.

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[12] David H. Russell and others, Ginn Basic Reading Series (Boston: Ginn and Company, 1964).

Vocabulary is controlled in this as in other basal texts. The books for grades one and two present a cumulative total of 795 words. This is in no way to be interpreted as the child's total reading vocabulary, however. His growing word analysis skills permit him to recognize hundreds of additional words.

Seven classrooms continued work in the modified linguistic materials of the Structural Reading Series[13] begun in grade one. This series consists of five worktexts designed to be completed by the average class by the end of second grade. The publisher describes this program as a modified linguistic approach. Bleismer and Yarborough,[14] in their study of first grade reading, have classified the approach as a synthetic phonic approach. The techniques used in this method, of learning the sounds of letters and structural parts of words and then learning skills of combining these elements into words, would tend to classify it as a synthetic phonic approach. It is distinguished from some synthetic phonic methods by its avoidance of piecemeal blending of isolated sounds. The emphasis is on recognizing and combining larger structural elements within the word. Words are studied in phonetically related groups so that the child can achieve independent recognition of words by insight into these phonetic relationships.

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[13] Catherine Stern and others, Structural Reading Series (Syracuse, New York: L. W. Singer Company, Inc., 1963).

[14] Emery P. Bleismer and Betty H Yarborough, "A Comparison of Ten Different Beginning Reading Programs in First Grade," Phi Delta Kappan, XLVI (June, 1965), 500-504.

In addition to this systematic technique of word recognition the Structural Reading Series is designed as a completely integrated language arts program. The child practices writing skills from the beginning of the program. Listening and speaking skills are developed throughout the materials beginning at the readiness level.

This program, like the basal system used in the study, is planned to develop reading comprehension and thinking skills. "Ample opportunity is given to develop related reading skills, such as generalization, summarizing, following directions, developing astuteness of observation, and developing the ability to think logically."[15]

The seven classrooms that formed the remaining treatment group continued to receive instruction in the Bloomfield-Barnhart Let's Read[16] linguistic readers. This is a series of nine readers and accompanying workbooks which the authors designed to be completed in two years by the average class.

The first step in this program for the child is mastery of recognition of the letters of the alphabet. The vocabulary of the readers is strictly controlled in that words are introduced in linguistically regular patterns. The first general pattern dealt with is the pattern of a consonant frame containing a single vowel. This is the most utilitarian pattern in English into which hundreds of monosyllabic words fit. The child is taught a single technique of word recognition. He spells and pronounces words in regular patterns such as _cat_, _hat_, _fat_, and so on until all the possible combinations of a single consonant followed by the pattern _at_ are mastered. The child is dealing with a minimal contrast auditorially and a minimal contrast visually as he moves from word to word. After mastery of all possible minimal contrasts in the initial consonant position, he begins, by the same spelling and pronouncing technique, to master minimal contrasts in the final consonant position. The next step is mastery of the minimal contrasts in the short vowel sounds represented by a single vowel in the medial position. This technique of spelling and pronouncing as a technique of recognition is continued throughout the program. After mastery of all possible minimal contrasts represented by single letters in the basic consonant frame, the child is taught to deal with blends in first the initial and then the final consonant position. He then progresses to long vowel sounds represented by paired vowels in the medial position. The next basic pattern the child is taught to handle is the pattern with final _e_ as a controller of vowel sound. Then the less frequent patterns in English spelling are mastered. The child at all times is dealing with the letter symbols in a specific environment and therefore with constant sound-symbol correlations. At no time are phonemes pronounced outside their environment within words, nor are letters dealt with in isolation. It is not until the child has established a stable concept of the alphabetic system of writing that he is introduced to the irregularities which are taught as exceptions to the known patterns.

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[15] Catherine Stern and others, Structural Reading Series, Book B, Teachers' Edition (Syracuse, New York: L. W. Singer Company, Inc., 1963), 5.

[16] Leonard Bloomfield and Clarence L. Barnhart, Let's Read (Bronxville, New York: C. L. Barnhart, Inc., 1963).

As soon as the child has mastered a few words in the first book he begins to read these words in simple context. No emphasis is placed on mastery of comprehension or interpretation skills in this program. The linguist's point of view of the basic task for pupils at the beginning stage of reading represented by the nine books of the Let's Read series is expressed by Fries as he defines the goals of what he terms the "transfer" stage of reading. "Learning to read in one's native language is learning to shift, to transfer, from auditory signs for the language signals, which the child has already learned, to visual graphic signs for the same signals."[17] Therefore, the basic task of pupils at this stage of reading is interpreted to be learning to make high speed responses to visual stimuli, that is spelling patterns that represent language signals. It is the opinion of the authors of the Let's Read materials that any emphasis placed on comprehension skills at this stage of learning will inhibit the development of these high speed discrimination responses. This cannot be interpreted to mean that comprehension is not the ultimate goal of reading at more mature stages.

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[17] Charles C. Fries, Linguistics and Reading (New York: Holt, Rinehart and Winston, Inc., 1962), 188.

To avoid unnecessary distractors from the major task of associating rapid visual discriminations with appropriate speech sounds the authors designed the Let's Read materials completely without illustration or decoration. The child is trained to recognize words by the single technique described above. No picture clues can be utilized.

Listening-Viewing Activities

A listening-viewing center was established in each of the twenty-one classrooms at the beginning of the school year. These centers contained the following equipment;

1. a tape recorder
2. a film strip projector
3. a small screen (18" x 24")
4. a record player
5. a jackbox containing eight sets of headphones.

Each teacher was asked to select the pupils in the lower third of her class who were least mature in language skills. Ninety minutes weekly listening-viewing activity was planned for these pupils. These periods were not planned for formal skill development but rather as added opportunities for language experiences. These activities permitted children to hear language used well in interesting stories thus helping them to become more familiar with the language of books. This was an opportunity for the child to expand his listening and speaking vocabulary through the concept development that was a part of these experiences. The nature of the equipment and intrinsic interest value of the instructional materials used was also conducive to extending the child's span of attention in a listening experience. These ancillary skills are felt to be important to the child's progress in reading.

Use was also made of this listening-viewing equipment for skill development. Teachers prepared taped lessons to give further practice on skills taught in the basic reading instruction.

Supplementary Reading

Thirty minutes of free reading time were provided daily for all classes. This was felt to be an important part of the child's reading program. It was during this time that the child had an opportunity to use his expanding reading skills in a setting highly satisfying to himself. During this time the child was free to choose from a wide variety of books the ones on the level of difficulty and on the topic of his choice.

Because of the inequality of library facilities in the schools involved, a great many children's books were supplied to each classroom. These ranged in difficulty from pre-primer level to about fourth grade level to accommodate the spread in reading abilities by the end of the year. Every type of book of interest to children of this age was included.

Description of the Communities

The classrooms involved in this study are located in five communities. One is a medium sized urban community; the remaining four are suburban areas of the urban community.

TABLE II

COMMUNITY CHARACTERISTICS FOR EACH EXPERIMENTAL CLASSROOM

	Median No. of Years Education of Adults	Median Income of Family in Community of Census Tract	Population of Community	Type of Community
Basal Reader Program				
Classroom 1	12.1	$6200	216,000	Urban
Classroom 2	12.7	7400	216,000	Urban
Classroom 3	12.9	8200	12,000	Suburban
Classroom 4	12.9	8200	12,000	Suburban
Classroom 5	12.0	8200	12,000	Suburban
Classroom 6	11.9	6700	7,300	Suburban
Classroom 7	11.9	6700	7,300	Suburban
Modified Linguistic Materials				
Classroom 1	12.1	7300	216,000	Urban
Classroom 2	12.0	6000	216,000	Urban
Classroom 3	12.5	6000	216,000	Urban
Classroom 4	12.9	8200	12,000	Suburban
Classroom 5	12.9	8200	12,000	Suburban
Classroom 6	11.9	6700	7,300	Suburban
Classroom 7	11.9	6700	7,300	Suburban
Linguistic Readers				
Classroom 1	8.8	5000	216,000	Urban
Classroom 2	15.5	8200	216,000	Urban
Classroom 3	10.2	5600	4,700	Suburban
Classroom 4	10.2	5600	4,700	Suburban
Classroom 5	12.9	8200	12,000	Suburban
Classroom 6	12.9	8200	12,000	Suburban
Classroom 7	11.9	6700	7,300	Suburban

* Information in this table came from the 1960 census report.

School Districts

Three school districts cooperated in the study. One district was the city school district of the urban community. The remaining two were central school districts each of which served two of the suburban communities.

TABLE III

SCHOOL DISTRICT DESCRIPTION

	School District		
	A	B	C
Length of School Day	5½ hours	5 hours	5 hours
Length of School Year	185 days	182 days	185 days
No. of Second Grade Rooms in District	19	12	105½
ADA Cost per Pupil	$700-799	$700-799	$700-799

Description of Teachers

The teachers participating in the study were well trained and experienced. There were no non-degree or uncertified teachers. Their experience ranged from no previous experience to a maximum of 22 years. Only one teacher was in her first teaching year. Data relative to teacher age, education, and experience is summarized in Table IV.

TABLE IV

INFORMATION ON TEACHERS*

	Average Age years	Education			Experience in years	
		B.S.	B.S.+	M.S.	Range	Average
Basal Reader Teachers	31	2	5	0	7-1	2½
Modified Linguistic Teachers	37	0	7	0	17-3	5
Linguistic	40	3	3	1	22-0	6

* Three teachers in the basal group were replaced during the instructional period. Data pertains to the teacher who worked last with the group.

Description of the Sample

All children in the present study were part of the first year study for that entire instructional period. Of the 467 children who were studied in the first grade, 376 were available for instruction, observation and testing throughout the entire second grade instructional period. All pupils in the study had had kindergarten training. The classrooms using the basal approach averaged 26 children each with a range from 21-32. The modified linguistic and linguistic classes each averaged 24 pupils. The range in the modified linguistic rooms was from 16-32, while the linguistic classes ranged from 20-28 in class size. The entire population of a given classroom was not necessarily part of the second grade study. In the classrooms where children who had been part of the first grade study had dropped out, class size was equalized according to the prevailing administrative procedures. The new children received the same instruction as the rest of the class but were not counted as part of the study. Further data on the nature of the groups making up the sample is included in the data analysis in Chapter IV.

All information pertaining to community, school district, teachers, and children has been coded on duplicate decks of data cards. One deck has been filed with the University of Minnesota Coordinating Center and will be used in combining data from all fourteen cooperative studies.

CHAPTER IV -- ANALYSIS OF THE DATA

Introduction

The data analysis reported in this chapter was made possible through the use of the Syracuse University Computing Center.

A one way analysis of variance was used to compare treatment groups on pre-test measures. These measures include readiness and intelligence tests given at beginning of grade one and pre-treatment achievement tests given at the beginning of grade two. Analysis of covariance was used for post-treatment comparison. Analysis of covariance using readiness factors, intelligence, and achievement level at beginning second grade as covariates were performed. Data on achievement means of subgroups based on ability level, sex, and treatment are reported.

Analysis of Pre-Experiment Status of Pupils

Table V includes pre-experiment information on pre-school attendance and chronological age of pupils studied during their second year of instruction. The data is based on the 376 pupils who were available for study throughout both the first and second grade instructional periods. Since the randomization procedures of this study were applied to classroom groups, data shown represents means of classroom means.

TABLE V

RESULTS OF THE ANALYSIS OF VARIANCE OF PRE-SCHOOL ATTENDANCE AND CHRONOLOGICAL AGE OF THE THREE TREATMENT GROUPS SEPTEMBER 1964

	Basal Reader Program (N=7)		Modified Linguistic Materials (N=7)		Linguistic Readers (N=7)		F	Significance Level*
	Mean	S.D.	Mean	S.D.	Mean	S.D.		
Pre-School Attendance	3.54**	.51	3.23**	.19	3.31**	.58	.89	N.S.
Chronological Age (Months)	75.01	1.35	75.37	1.42	76.61	1.21	2.79	N.S.

* F.95 = 3.55, F.99 = 6.01 with 2 and 18 degrees of freedom.

** This figure is the code provided by the Minnesota Coordinating Center and indicates that the mean pre-school attendance was between 101 and 200 half-days of kindergarten, nursery and/or church school experience.

No significant differences were found between treatment group means for either pre-school attendance or chronological age. All pupils in the study had had kindergarten experience.

All pupils were given the Pintner-Cunningham Primary Test at the beginning of grade one. Table VI shows the analysis of variance of Pintner-Cunningham raw scores and derived mental ages for pupils studied in grade 2. The data shown represents means of classroom means.

TABLE VI

RAW SCORE MEANS OF TREATMENT GROUPS AND RESULTS OF THE ANALYSIS OF VARIANCE OF PINTNER-CUNNINGHAM RAW SCORE AND MENTAL AGE

	Basal Reader Program (N=7)		Modified Linguistic Materials (N=7)		Linguistic Readers (N=7)		F	Significance Level*
	Mean	S.D.	Mean	S.D.	Mean	S.D.		
Pintner-Cunningham Raw Score (Sept. '64)	42.19	2.04	39.17	3.91	39.41	4.12	1.62	N.S.
Pintner-Cunningham Mental Age (Sept. '64)	81.56	4.32	78.34	6.76	78.99	5.87	.61	N.S.

* $F_{.95} = 3.55$, $F_{.99} = 6.01$ with 2 and 18 degrees of freedom.

A slight numerical superiority in favor of the Basal Reader Group is indicated by the data. The two other treatment groups are almost identically matched. The slight superiority for the Basal Reader Group does not approach significance at the .05 level. It can be assumed that the three groups did not differ significantly on the ability variable.

Four measures of reading readiness were administered to all pupils before first grade instruction began. The subtest raw scores of each of these tests were evaluated by analysis of variance to determine whether there were any important differences between treatment groups on the measured readiness skills. Analysis of variance was also applied to the total scores of those tests which yield results in the form of a total score. Table VII is a summary of the results of this analysis of variance for the subtest mean scores obtained on the Murphy-Durrell Diagnostic Reading Readiness Test.

TABLE VII

RAW SCORE MEANS OF TREATMENT GROUPS AND RESULTS OF THE ANALYSIS OF VARIANCE OF THE MURPHY-DURRELL DIAGNOSTIC READING READINESS TEST (SEPTEMBER, 1964)

	Basal Reader Program (N=7)		Modified Linguistic Materials (N=7)		Linguistic Readers (N=7)		F	Significance Level *
	Mean	S.D.	Mean	S.D.	Mean	S.D.		
Murphy-Durrell Diagnostic Reading Readiness Test								
Identification of Phonemes	34.59	5.34	26.83	7.86	30.76	6.46	2.39	N.S.
Capital Letter Names	21.16	1.76	16.56	2.55	19.70	3.93	1.42	N.S.
Lower Case Letter Names	16.90	1.61	14.46	3.09	15.86	3.20	1.41	N.S.
Total Letter Names	37.94	3.16	32.64	5.38	35.76	7.00	1.69	N.S.
Learning Rate	11.06	1.60	9.53	1.57	10.27	1.36	1.79	N.S.

* F.95 = 3.55, F.99 = 6.01 with 2 and 18 degrees of freedom.

The raw score means of children in the Basal Reader Group showed a slight, consistent superiority over the other two treatment groups on all Murphy-Durrell subtests. The means for children in the Modified

Linguistic group were consistently the lowest on all subtests with the Linguistic group occupying the middle position. Statistically these differences were non-significant. The F ratio in no case approached significance at the .05 level.

Table VIII is a summary of the analysis of variance of the subtest and total raw score means of the Metropolitan Readiness Test for the three treatment groups.

TABLE VIII

RAW SCORE MEANS OF TREATMENT GROUPS AND RESULTS OF THE ANALYSIS OF VARIANCE OF THE METROPOLITAN READINESS TEST (SEPTEMBER, 1964)

	Basal Reader Program (N=7)		Modified Linguistic Materials (N=7)		Linguistic Readers (N=7)		F	Significance Level *
	Mean	S.D.	Mean	S.D.	Mean	S.D.		
Metropolitan Readiness Test								
Word Meaning	10.91	1.15	10.07	1.53	9.49	1.81	1.56	N.S.
Listening	10.46	.54	9.61	1.04	9.57	1.27	1.74	N.S.
Matching	9.17	1.33	8.59	1.83	8.70	1.89	.23	N.S.
Alphabet	11.29	1.24	9.49	1.71	10.11	1.68	2.41	N.S.
Numbers	14.96	1.32	13.16	2.65	13.56	1.91	1.51	N.S.
Copying	7.07	.84	5.90	2.43	6.50	1.34	.86	N.S.
Total	63.96	5.09	56.70	9.67	58.11	9.11	1.53	N.S.

* F.95 = 3.55, F.99 = 6.01 with 2 and 18 degrees of freedom.

Raw score means on all subtests and the total raw score mean of the Metropolitan Readiness Test are numerically slightly greater for the Basal Reader Group. These differences are not statistically important. In no case did the F ratio approach significance at the .05 level.

The data summarized in Table IX is the result of an analysis of variance performed on subtest and total means of the Allyn and Bacon Pre-Reading Test for each of the three treatment groups.

TABLE IX

RAW SCORE MEANS OF TREATMENT GROUPS AND RESULTS OF THE ANALYSIS OF VARIANCE OF THE ALLYN AND BACON PRE-READING TEST

	Basal Reader Program (N=7)		Modified Linguistic Materials (N=7)		Linguistic Readers (N=7)		F	Significance Level *
	Mean	S.D.	Mean	S.D.	Mean	S.D.		
Allyn and Bacon Pre-Reading Test								
Auditory Discrimination -- Rhyming Words	18.97	.44	16.07	2.12	17.67	1.37	6.76	.01
Auditory Discrimination -- Initial Consonants	15.16	.89	14.96	1.93	14.21	1.76	.68	N.S.
Visual Discrimination -- Word Forms	17.23	1.87	15.69	1.70	17.21	1.15	2.15	N.S.
Comprehension	15.30	.48	14.59	1.01	14.56	1.14	1.46	N.S.
Total	65.89	3.02	61.34	5.25	63.67	4.11	2.02	N.S.
Perceptual-Motor	30.41	1.81	30.89	2.77	31.74	2.68	.53	N.S.

* F.95 = 3.55, F.99 = 6.01 with 2 and 18 degrees of freedom.

Again, the mean scores of the Basal Reader group are numerically superior to the means of the other two groups in every case. These differences are nonsignificant in all instances except in the Rhyming Words Sub-test, where a significant difference at the .01 level is revealed. This particular sub-test showed a correlation with reading achievement of .22 on tests administered at the end of grade one. The correlation was .21 with reading achievement at the end of grade two. Neither of these correlations is of sufficient magnitude to be of any importance as a predictive criterion of reading success and can safely be ignored as an important difference between the groups.

Results of analysis of variance of the two Thurstone tests are presented in Table X.

TABLE X

RAW SCORE MEANS OF TREATMENT GROUPS AND RESULTS OF THE ANALYSIS OF VARIANCE OF THE THURSTONE PATTERN COPYING AND IDENTICAL FORMS

	Basal Reader Program (N=7)		Modified Linguistic Materials (N=7)		Linguistic Readers (N=7)		F	Significance Level *
	Mean	S.D.	Mean	S.D.	Mean	S.D.		
Thurstone Pattern Copying	9.97	2.03	7.80	3.16	11.03	2.64	2.70	N.S.
Thurstone Identical Forms	17.66	2.84	16.23	2.66	14.74	2.17	2.25	N.S.

*F.95 = 3.55, F.99 = 6.01 with 2 and 18 degrees of freedom.

The prevailing pattern of slight but non-significant superiority for the Basal Group is maintained in the results of the Thurstone Identical Forms. On the Thurstone Pattern Copying test the Linguistic Group is somewhat superior but the difference is non significant.

In summary, results of analysis of variance of four measures of reading readiness and the test of ability show the three treatment groups to be equivalent on the readiness and mental factors measured. All differences revealed were nonsignificant except for the Rhyming Words Sub-test of the Allyn and Bacon Pre-Reading Test. Since, as indicated by the small correlation coefficients of this subtest with reading skill, the abilities underlying success on this test account for such a minor portion of variance in reading achievement this one minor difference can safely be disregarded. The assumption can be made that the three treatment groups were statistically equivalent in mental ability and readiness for reading as measured by readiness tests at the beginning of first grade instruction.

Analysis of Achievement Status of Pupils Before the Second Grade Instructional Period

The Stanford Achievement Primary I Battery, Form X was administered in May, 1965. Results of an analysis of variance of means of the three treatment groups is presented in Table XI.

TABLE XI

RAW SCORE MEANS OF TREATMENT GROUPS AND RESULTS OF THE ANALYSIS OF VARIANCE OF THE STANFORD ACHIEVEMENT TEST PRIMARY I BATTERY, FORM X (MAY, 1965)

	Basal Reader Program (N=7)		Modified Linguistic Materials (N=7)		Linguistic Readers (N=7)		F	Significance Level *
	Mean	S.D.	Mean	S.D.	Mean	S.D.		
Stanford Achievement Test								
Word Reading	21.21	2.97	21.97	4.73	19.61	4.46	.60	N.S.
Paragraph Meaning	22.69	4.28	18.31	5.84	16.40	5.93	2.49	N.S.
Vocabulary	25.67	2.91	22.01	3.53	22.20	4.55	2.14	N.S.
Spelling	13.76	3.28	11.49	5.03	11.03	3.90	.88	N.S.
Word Study Skills	42.34	3.33	39.13	6.73	37.01	5.31	1.79	N.S.

*F.95 = 3.55, F.99 = 6.01 with 2 and 18 degrees of freedom.

No statistically significant differences in means of treatment groups were evident at the completion of the first grade instructional period. As in the case of the pre-experiment ability and readiness measures, a minor numerical superiority favoring the Basal Reader Group is revealed by examination of means. This held true consistently for all means except the mean for Word Reading where the Modified Linguistic group mean was fractionally superior. Since all differences were non-significant, the assumption that the three treatment groups were equal in ability at time of testing on the skills measured by this test can be safely made.

Because of the possibility of either a gain or loss in skills in the four month interim between the close of the first grade instructional period and the beginning of second grade, another form of the Stanford Achievement Test, Primary I Battery, was given in September of 1965 as a pre-test measure. This precaution was taken to be certain that the experimental groups were equated in skill at that time so that a meaningful measurement could be made of any treatment effects that might occur during grade 2. Table XII is a summary of an analysis of variance performed on the treatment group means achieved on the various subtests.

TABLE XII

RAW SCORE MEANS OF TREATMENT GROUPS AND RESULTS OF THE ANALYSIS OF VARIANCE OF THE STANFORD ACHIEVEMENT TEST, PRIMARY I BATTERY, FORM W (SEPT. 1965)

	Basal Reader Program (N=7)		Modified Linguistic Materials (N=7)		Linguistic Readers (N=7)		F	Significance Level *
	Mean	S.D.	Mean	S.D.	Mean	S.D.		
Stanford Achievement Test								
Word Reading	24.91	3.19	23.66	5.24	21.46	5.80	.90	N.S.
Paragraph Meaning	24.41	4.80	22.24	6.81	20.80	7.16	.58	N.S.
Vocabulary	26.96	4.29	24.91	4.14	24.67	3.88	.65	N.S.
Spelling	10.10	2.61	11.34	3.53	10.97	4.03	.24	N.S.
Word Study Skills	40.99	4.63	40.84	5.15	39.16	6.98	.22	N.S.

* $F_{.95} = 3.55$, $F_{.99} = 6.01$ with 2 and 18 degrees of freedom.

Again, each subtest mean, except one, favors the Basal Reader Group. No F ratio approaches significance, however, so the assumption of equivalence of treatment groups on these measured criterion skills can be made.

Analysis of Factors Other Than Treatment That Could Affect Pupil Progress During the Instructional Period

Certain factors other than treatment effect operate within the primary classroom and may affect achievement of pupils on criterion measures. Pupil and teacher attendance are two of these factors that are impossible to control in any experiment. Amount of time devoted to direct reading instruction might also determine to some extent the achievement of pupils. Teacher competence is a further factor that could be expected to have an important effect on the achievement of pupils.

A summary of comparative teacher and pupil absences is presented in Table XIII.

TABLE XIII

ANALYSIS OF ATTENDANCE FOR THE THREE TREATMENT GROUPS DURING THE SECOND GRADE INSTRUCTIONAL PERIOD

	Basal Reader Program (N=7)		Modified Linguistic Materials (N=7)		Linguistic Readers (N=7)		F	Significance Level *
	Mean	S.D.	Mean	S.D.	Mean	S.D.		
Pupil Absences (Number of Days)	9.34	1.57	7.13	1.58	6.53	1.26	7.02	.01
Teacher Absences (Number of Days)	6.57	2.37	10.86	14.0	6.57	4.39	.58	N.S.

* F.95 = 3.55, F.99 = 6.01 with 2 and 18 degrees of freedom.

It can be noted that a significant difference at the .01 level was evident in the attendance of pupils. Examination of the correlation coefficients between pupil attendance and various objective and subjective criterion measures of reading achievement indicates that these correlations are extremely low and could account for only minute amounts of variability in achievement. Of thirteen such correlations, only three differ significantly from a zero correlation. The largest of these three is only of the magnitude of .20. It is reasonable, then to assume that although a statistically significant difference appears in pupil attendance this difference is of no practical importance. Exact correlational data relative to this discussion may be found on page 109.

No significant differences in teacher attendance are evident.

Competency of the teacher managing the instruction of the children is a third variable that can have important effects on achievement. The problem of assessing teacher competency is extremely complex. The method of making this assessment in this study can at best be described as crude. The three members of the research team who had periodically observed instruction in each of the classrooms was asked to assign a numerical rating to each teacher. The rating scale was from 5 to 1 with 5 being a superior rating, three an average rating and 1 designating incompetency. These ratings were not applied to any specific criteria but were essentially a subjective evaluation of over all performance. Each research staff member rated only the teachers in the one treatment group he had observed. The three staff members varied considerably in the extensiveness of their previous experience in both teaching at elementary level and in evaluating performance of teachers. The results of these ratings are presented in Table XIV.

TABLE XIV

SUMMARY OF TEACHER RATINGS FOR THE THREE TREATMENT GROUPS AND AVERAGE TEACHER RATING FOR EACH OF THE THREE GROUPS FOR SECOND GRADE INSTRUCTIONAL PERIOD

	Number of Teachers Receiving Rating		
Rating	Linguistic	Modified Linguistic	Basal
Superior	2	0	1
Above Average	1	3	1
Average	2	3	1
Below Average	2	1	4
Incompetent	0	0	0
Average Teacher Rating	3.4	3.4	2.9

Bearing in mind the limitations of this rating procedure, it can be assumed that the teachers in the three groups were comparable in competency. In all three groups a considerable within-group variability is evident. This within-group variability as it relates to pupil achievement will be discussed in detail beginning on page 102.

The amount of time devoted to direct and indirect instruction in reading could be expected to affect pupil achievement. This was controlled as closely in this study as is feasible within the limitations imposed by a number of schools within several different districts. Table XV summarizes instructional time across treatment groups.

TABLE XV

SUMMARY OF DIRECT INSTRUCTIONAL TIME, SUPPORTING INSTRUCTIONAL TIME AND TOTAL INSTRUCTIONAL TIME DEVOTED TO READING ACTIVITIES IN THE THREE TREATMENT GROUPS DURING SECOND GRADE

	Basal Reader Program (N=7)		Modified Linguistic Materials (N=7)		Linguistic Readers (N=7)		F	Significance Level*
	Mean	S.D.	Mean	S.D.	Mean	S.D.		
Direct Instructional Time (Minutes per Week)	506.43	39.87	524.29	44.29	465.00	22.55	4.79	<.05
Supporting Time	331.43	47.41	275.71	116.06	325.71	45.86	1.11	N.S.
Total Time	837.86	51.30	800.00	112.21	790.71	52.71	.73	N.S.

* F.95 = 3.55, F.99 = 6.01 with 2 and 18 degrees of freedom.

A significant difference is shown to exist in the time devoted to direct instruction in the three groups. The Linguistic Group received significantly less direct instruction than the other two groups. This difference was equalized, however, in the supporting time for reading instruction since no significant difference in total reading time is revealed. The correlation coefficients between direct instructional time and reading achievement as measured by nine objective criteria are extremely small. On only two criteria was the correlation coefficient found to differ significantly from 0. The higher of these, r.24, the correlation between instructional time and reading rate, Meaning Subtest.

This is a 36 item multiple choice test, graduated in difficulty, which measures the ability of a pupil to read a sentence and to select a correct word to complete the sentence.

2. The Stanford Achievement Test, Primary II Battery, Paragraph Meaning Subtest.

   This subtest is a series of paragraphs, graduated in difficulty, from each of which one or more words have been omitted. The pupil demonstrates his comprehension of the paragraph by selecting from four possible answers the proper word for each omission. The test provides a functional measure of the pupil's ability to comprehend connected discourse at varying levels of comprehension.

3. The Stanford Achievement Test, Primary II Battery, Spelling Subtest.

   This is a thirty item dictation type spelling test. The choice of words in the test was based on frequency of use in the writing of primary pupils. Although this is not a reading task, it is a closely related skill since correlations between measures of reading and spelling proved to be in the high seventies for the sample of pupils in this study.

4. Stanford Achievement Test, Primary II Battery, Word Study Skills.

   This is a sixty-four item multiple choice test in two parts.

The first part is dictated by the teacher. She reads aloud a stimulus word. The child is required to discriminate the beginning or final sound of this word and select a word that begins or ends the same from four more words read by the teacher. The last thirty-four items require the child to read a key word and find a word that has a similar designated sound in one of several other words. The focus on sound is sharpened by the use of different spellings of the same sound being used in the key word and the matching word. The skills measured by this subtest have a correlation of .79 with reading achievement for the sample of pupils in this study.

Table XVI is a summary of the analysis of covariance for the Word Reading subtest. Since randomization in this study was on the basis of random assignment of treatment to classroom,as discussed in Chapter III, this analysis was performed on means of classroom means. Therefore, the twenty-one participating classrooms give, for this analysis, a total N of 21. Each of the three treatment groups had a group N of 7.

TABLE XVI

ANALYSIS OF COVARIANCE FOR THE STANFORD ACHIEVEMENT TEST WORD MEANING SUBTEST GIVEN MAY, 1966

Covariate	Source of Variation	Sum of Squares	df	Mean Square	F*	Significance Level
Stanford Word Reading - Sept. 1965	Between Groups	26.4036	2	13.2018	9.40	.01
	Within Groups	23.8782	17	1.4046		
Stanford Paragraph Meaning - Sept. 1965	Between Groups	23.1304	2	11.5652	8.63	.01
	Within Groups	22.7834	17	1.3402		
Pintner Mental Age - Sept. 1964	Between Groups	29.8304	2	14.9152	2.69	N.S.
	Within Groups	94.1443	17	5.5379		
Metropolitan Total - Sept. 1964	Between Groups	45.646	2	22.8230	2.77	N.S.
	Within Groups	139.8658	17	8.2274		

*F.95 = 3.59, F.99 = 6.11 with 2 and 17 degrees of freedom.

Thus, by equating the groups on reading achievement at the beginning of grade two, a significant difference that can be attributed to treatment effect is noted in the skill of reading words in isolation. Holding mental ability and readiness level at beginning first grade constant did not show this effect.

The procedure recommended by Garrett[1] for determining significance of differences among adjusted $\underline{Y}$ means was used. Tables XVII through XX summarize data on the adjusted mean scores for the treatment groups and indicate which adjusted means differed significantly.

TABLE XVII

ANALYSIS OF COVARIANCE ADJUSTED MEANS OF THREE TREATMENT GROUPS FOR WORD MEANING SUBTEST GIVEN MAY, 1966 COVARIATE WORD MEANING SUBTEST GIVEN SEPT. 1965

Group	N	Mean of Covariate	Beta	Criterion Mean	Adj. Criterion Mean
Linguistic	7	21.46	.8120	19.64	21.27 *
Basal Reader	7	24.91	1.1538	19.86	18.50
Modified Linguistic	7	23.66	.8133	20.79	20.52 *
Total		23.34	.8615		

SD Y.x	SE_D	df	Sig. t at .01 level	Sig. Difference between Adjusted Means
1.185	.6328	17	2.90	1.84

*Differ significantly from Basal Reader mean at .01 level

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[1] Henry E. Garrett, Ph. D., Statistics in Psychology and Education, (New York: Longmans Green and Co., 1958) p. 299.

TABLE XVIII

ANALYSIS OF COVARIANCE ADJUSTED MEANS OF THREE TREATMENT GROUPS FOR WORD MEANING SUBTEST GIVEN MAY, 1966--COVARIATE PARAGRAPH MEANING SUBTEST GIVEN SEPTEMBER 1965

Group	N	Mean of Covariate	Beta	Criterion Mean	Adj. Criterion Mean
Linguistic	7	20.80	.6414	19.64	20.76 *
Basal Reader	7	24.41	.7482	19.86	18.58
Modified Linguistic	7	22.24	.6448	20.79	20.95 *
Total		22.49	.6631		

$SD_{y.x}$	SE_D	df	Sig. t at .01 level	Sig. Difference between Adjusted Means
1.157	.6178	17	2.90	1.79

*Differ significantly from Basal Reader mean at .01 level.

TABLE XIX

ANALYSIS OF COVARIANCE ADJUSTED MEANS OF THREE TREATMENT GROUPS FOR WORD MEANING SUBTEST GIVEN MAY 1966 -- COVARIATE PINTNER MENTAL AGE SEPTEMBER 1964

Group	N	Mean of Covariate	Beta	Criterion Mean	Adj. Criterion Mean
Linguistic	7	78.99	.6399	19.64	20.06
Basal Reader	7	81.56	.7705	19.86	18.61
Modified Linguistic	7	78.34	.5992	20.78	21.62
Total		79.63	.6458		

Differences in adjusted criterion means N.S.

TABLE XX

ANALYSIS OF COVARIANCE ADJUSTED MEANS OF THREE TREATMENT GROUPS FOR WORD MEANING SUBTEST GIVEN MAY 1966 -- COVARIATE METROPOLITAN READINESS TOTAL SEPTEMBER 1964

Group	N	Mean of Covariate	Beta	Criterion Mean	Adj. Criterion Mean
Linguistic	7	58.11	.3264	19.64	20.24
Basal Reader	7	63.96	.6007	19.86	18.09
Modified Linguistic	7	56.70	.4235	20.79	21.96
Total		59.59	.4058		

Differences in adjusted criterion means N.S.

In summary, both the Linguistic Group and the Modified Linguistic Group means were significantly superior to the mean of the Basal Reader Group when achievement at beginning second grade level was equalized by covariance. Holding readiness and intellectual level constant did not reveal a significant difference in adjusted mean score on the skill of word reading. The adjusted means, however, conformed to the pattern established in the two significant analyses in that the adjusted mean for the Basal Group was, in each case, the smallest.

Examination of Table XVII shows the mean score of the Basal Reader Group to be superior to the other two groups on this word reading skill at the beginning of the second grade period of instruction. We can infer from this that the Basal Reader procedure provided for a slightly more rapid rate of growth in this skill at first grade level than the other two procedures. This rate did not prove to be significantly superior to the rate of growth produced by the other two methods as shown earlier in Table XII. The fact that the scores at the end of second grade do show significant differences favoring both the other two treatment groups indicate that at this grade level the Linguistic and the Modified Linguistic methods enabled pupils to make more rapid progress in word recognition.

Table XXI is a summary of the analysis of covariance for the Paragraph Meaning subtest. In interpreting the data in this table, the information on randomization which applied to Table XVI should again be borne in mind.

TABLE XXI

ANALYSIS OF COVARIANCE FOR THE STANFORD ACHIEVEMENT TEST PARAGRAPH MEANING SUBTEST GIVEN MAY, 1966

Variable Held Constant	Source of Variation	Sum of Squares	df	Mean Square	F *	Significance Level
Stanford Word Reading - Sept. 1965	Between Groups	25.0374	2	12.5187	1.70	N.S.
	Within Groups	124.9908	17	7.3524		
Stanford Paragraph Meaning - Sept.1965	Between Groups	6.4592	2	3.2296	.57	N.S.
	Within Groups	96.9867	17	5.7051		
Pintner Mental Age - Sept. 1964	Between Groups	16.1076	2	8.0538	.54	N.S.
	Within Groups	252.4109	17	14.8477		
Metropolitan Total-Sept.1964	Between Groups	47.607	2	23.8035	1.18	N.S.
	Within Groups	341.5368	17	20.0904		

* F.95 = 3.59, F.99 = 6.11 with 2 and 17 degrees of freedom.

No significant differences in the ability to read and comprehend connected discourse is shown between groups. It can be assumed that at second grade level all three instructional procedures, in spite of their very different approaches to comprehension, serve equally well in teaching the skills measured by this subtest. The aims of the three approaches in regard to comprehension development were contrasted in Chapter III.

Table XXII is a summary of the data on adjusted mean scores for the treatment groups. As shown in the table, there were no significant differences in these adjusted means.

TABLE XXII

ANALYSIS OF COVARIANCE ADJUSTED MEANS OF THREE TREATMENT GROUPS FOR PARAGRAPH MEANING SUBTEST GIVEN MAY,1966

Group	N	Mean of Covariate	Beta	Criterion Mean	Adj. Criterion Mean
		Covariate Word Reading Sept. 1965			
Linguistic	7	21.46	1.5511	30.81	33.74
Basal Reader	7	24.91	1.6582	33.79	31.35
Modified Ling.	7	23.66	1.5149	31.80	31.31
Total		23.34	1.5525		
		Covariate Paragraph Meaning Sept. 1965			
Linguistic	7	20.80	1.2850	30.81	32.85
Basal Reader	7	24.41	1.0555	33.79	31.45
Modified Ling.	7	22.24	1.2012	31.80	32.09
Total		22.49	1.2090		
		Covariate Metropolitan Readiness Total Sept.1964			
Linguistic	7	58.11	.7871	30.81	32.02
Basal Reader	7	63.96	1.0375	33.79	30.22
Modified Ling.	7	56.70	.7806	31.80	34.16
Total		59.59	.8159		
		Covariate Pintner M.A. Sept. 1964			
Linguistic	7	78.99	1.4018	30.81	31.61
Basal Reader	7	81.56	1.2900	33.79	31.40
Modified Ling.	7	78.34	1.0863	31.80	33.39
Total		79.62	1.2347		

Differences in adjusted criterion means N.S.

Table XXIII is a summary of the analyses of covariance for the Spelling subtest. In interpreting the data in this table, the information on randomization and Ns which applied to Table XVI should again be kept in mind.

TABLE XXIII

ANALYSIS OF COVARIANCE FOR THE STANFORD ACHIEVEMENT TEST SPELLING SUBTEST GIVEN MAY, 1966

Variable Held Constant	Source of Variation	Sum of Squares	df	Mean Square	F *	Significance Level
Stanford Word Reading-Sept.1965	Between Groups	53.9056	2	26.9528	9.42	.01
	Within Groups	48.6438	17	2.8614		
Stanford Paragraph Meaning-Sept.1965	Between Groups	46.5894	2	23.2947	8.07	.01
	Within Groups	49.0161	17	2.8833		
Pintner Mental Age-Sept.1964	Between Groups	44.3090	2	22.1545	3.97	.05
	Within Groups	94.7699	17	5.5749		
Metropolitan Total-Sept.1964	Between Groups	62.0486	2	31.0243	4.48	.05
	Within Groups	117.7216	17	6.9248		

* F.95 = 3.59, F.99 = 6.11 with 2 and 17 degrees of freedom.

Table XXIII reveals a significant difference between treatment group means that represent the ability to spell frequently used words dictated in a list. This is true when both achievement and readiness and aptitude are held constant.

To determine where the differences were located, the procedure identified in the discussion of Tables XVII through XX was again used. Tables XXIV through XXVII are a summary of the data on the adjusted mean scores for the treatment groups and indicate which adjusted means differ significantly.

TABLE XXIV

ANALYSIS OF COVARIANCE ADJUSTED MEANS OF THREE TREATMENT GROUPS FOR THE SPELLING SUBTEST GIVEN MAY, 1966 -- COVARIATE WORD MEANING SUBTEST GIVEN SEPTEMBER, 1965

Group	N	Mean of Covariate	Beta	Criterion Mean	Adj. Criterion Mean
Linguistic	7	21.46	.7597	14.83	16.19 *
Basal Reader	7	24.91	.8666	13.27	12.13
Modified Ling.	7	23.66	.6285	14.87	14.64 **
Total		23.34	.7245		

$SD_{x.y}$	SE_D	df	Significant t	Significant Diff. Between Adjusted Means
1.691	.9030	17	2.90 at .01 2.11 at .05	2.62 1.91

* Differs significantly from Basal Reader Mean at .01 level.
** Differs significantly from Basal Reader Mean at .05 level.

TABLE XXV

ANALYSIS OF COVARIANCE ADJUSTED MEANS OF THREE TREATMENT GROUPS FOR THE SPELLING SUBTEST GIVEN MAY, 1966 -- COVARIATE PARAGRAPH MEANING SUBTEST GIVEN SEPTEMBER, 1965

Group	N	Mean of Covariate	Beta	Criterion Mean	Adj. Criterion Mean
Linguistic	7	20.80	.5840	14.83	15.77 *
Basal Reader	7	24.41	.5411	13.27	12.20
Modified Ling.	7	22.24	.5331	14.87	15.01 *
Total		22.49	.5563		

$SD_{x.y}$	SE_D	df	Significant t	Significant Difference Between Adjusted Means
1.698	.9067	17	2.90 at .01	2.63

* Differ significantly from Basal Reader Mean at .01 level.

TABLE XXVI

ANALYSIS OF COVARIANCE ADJUSTED MEANS OF THREE TREATMENT GROUPS FOR THE SPELLING SUBTEST GIVEN MAY, 1966 -- COVARIATE PINTNER MA, SEPTEMBER, 1964

Group	N	Mean of Covariate	Beta	Criterion Mean	Adj. Criterion Mean
Linguistic	7	78.99	.5829	14.83	15.18 *
Basal Reader	7	81.56	.5965	13.27	12.21
Modified Ling.	7	78.34	.5033	14.87	15.58 *
Total		79.63	.5486		

$SD_{x.y}$	SE_D	df	Significant t	Significant Difference Between Adjusted Means
2.361	1.2608	17	2.11 at .05	2.66

* Differ significantly from Basal Reader Mean at .05 level.

TABLE XXVII

ANALYSIS OF COVARIANCE ADJUSTED MEANS OF THREE TREATMENT GROUPS FOR THE SPELLING SUBTEST GIVEN MAY, 1966 -- COVARIATE METROPOLITAN READINESS TOTAL SEPTEMBER, 1964

Group	N	Mean of Covariate	Beta	Criterion Mean	Adj. Criterion Mean
Linguistic	7	58.11	.2976	14.83	15.35 **
Basal Reader	7	63.96	.5210	13.27	11.71
Modified Ling.	7	56.70	.3641	14.87	15.90 *
Total		59.59	.3565		

$SD_{x.y}$	SE_D	df	Significant t	Significant Difference Between Adjusted Means
2.631	1.405	17	2.11 at .05 2.90 at .01	2.96 4.07

* Differs significantly from Basal Reader mean at .01 level.
** Differs significantly from Basal Reader mean at .05 level.

Data in the preceding four tables can be summarized as follows. Both the Linguistic and Modified Linguistic approaches to primary reading instruction were superior to the Basal Approach in developing spelling skills as they are measured by the Stanford Achievement Test Spelling Subtest. Comparison of the means for spelling in Table 8 with those for spelling in Tables XX-XXIII show the most rapid rate of growth during grade two for the Linguistic Group.

TABLE XXVIII

SUMMARY OF RATE OF SPELLING GROWTH IN GRADE TWO

Group	Spelling Mean September, 1965	Spelling Mean May, 1966	Amount of Growth
Linguistic	10.79	14.83	4.04
Basal Reader	10.10	13.27	3.17
Modified Linguistic	11.34	14.87	3.53

Mean scores for the three treatment groups were examined to see if any differences in retention of spelling skills had occurred during the summer months between grades one and two. This information is presented in Table XXIX.

TABLE XXIX

CHANGES IN SPELLING MEANS FOR THE THREE TREATMENT GROUPS DURING THE PERIOD OF NO INSTRUCTION BETWEEN GRADES ONE AND TWO

Group	Spelling Mean May, 1965	Spelling Mean September, 1965	Amount of Change
Linguistic	11.03	10.97	- .06
Basal Reader	13.76	10.10	-3.66
Modified Linguistic	11.49	11.34	- .15

The losses shown by the Linguistic and Modified Linguistic Groups are equal to or less than the Standard Error of Measurement for the test used. The loss shown by the Basal Reader Group is in excess of the Standard Error of Measurement and in all probability represents a true loss of skill. The Standard Error of Measurement for this subtest is .10 grade score points.[2] The loss of 3.66 raw score points represents a grade score loss between .3 and .4.

The data related to spelling skill can be interpreted to indicate that achievement in spelling skill by the end of grade 2 was facilitated for this population by reading instruction in both the Linguistic or Modified Linguistic approach.

A summary of the Analysis of Covariance for the Word Study Skills Subtest appears in Table XXX. Again, this analysis was done on means of classroom means.

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[2] Stanford Achievement Test, Directions for Administering, Primary I Battery, Truman Kelley, Richard Madden, Eric F. Gardner and Herbert C. Rudman (New York: Harcourt, Brace & World, Inc., 1964) p. 30.

TABLE XXX

ANALYSIS OF COVARIANCE FOR THE STANFORD ACHIEVEMENT TEST WORD STUDY SKILLS SUBTEST GIVEN MAY, 1966

Variable Held Constant	Source of Variation	Sum of Squares	df	Mean Square	F*	Significance
Stanford Word Reading - Sept.1965	Between Groups	20.2408	2	10.1204	.89	N.S.
	Within Groups	194.3712	17	11.4336		
Stanford Paragraph Meaning - Sept.1965	Between Groups	4.9770	2	2.4885	.23	N.S.
	Within Groups	186.7025	17	10.9825		
Pintner MA-Sept. 1964	Between Groups	1.9284	2	.9642	.44	N.S.
	Within Groups	373.796	17	21.988		
Metropolitan Total - Sept. 1964	Between Groups	7.5834	2	3.7917	.14	N.S.
	Within Groups	465.4158	17	27.3774		

* F.95 = 3.59, F.99 = 6.11 with 2 and 17 degrees of freedom

No F approaches significance in this analysis. It can be assumed that all three experimental treatments can serve equally well in developing the skills measured on this subtest in spite of the very different approaches to developing these skills employed in the three treatments. These approaches were compared in Chapter III.

Table XXXI is a summary of the data on adjusted Word Study Skills means. As indicated in Table XXX, there are no significant differences between any of the means.

TABLE XXXI

ANALYSIS OF COVARIANCE ADJUSTED MEANS OF THREE TREATMENT GROUPS FOR WORD STUDY SKILLS SUBTEST GIVEN MAY, 1966

Group	N	Mean of Covariate	Beta	Criterion Mean	Adjusted Criterion Mean
Covariate Word Reading, Sept., 1965					
Linguistic	7	21.46	1.2824	37.17	39.39
Basal Reader	7	24.91	1.8196	39.51	37.67
Modified Ling.	7	23.66	.8079	37.36	36.99
Total		23.34	1.1768		
Covariate Paragraph Meaning, Sept., 1965					
Linguistic	7	20.80	.9922	37.17	38.71
Basal Reader	7	24.41	1.2041	39.51	37.76
Modified Ling.	7	22.24	.6732	37.36	37.58
Total		22.49	.9100		
Covariate Metropolitan Readiness Total, Sept., 1964					
Linguistic	7	58.11	.4777	37.17	37.93
Basal Reader	7	63.96	.9734	39.51	37.28
Modified Ling.	7	56.70	.4151	37.36	38.84
Total		59.59	.5124		
Covariate Pintner MA, Sept., 1964					
Linguistic	7	78.99	1.0135	37.17	37.71
Basal Reader	7	81.56	1.0984	39.51	37.90
Modified Ling.	7	78.34	.5920	37.36	38.43
Total		79.63	.8346		

Differences in adjusted criterion means N.S.

Analysis of Achievement of the Sub-sample. The skills of a randomly selected sub-sample of each treatment group were examined in greater depth by means of individual tests. The following tests were used:

1. The Gilmore Oral Reading Test

   This yielded a score for accuracy, rate of reading and comprehension.

2. Gates Word Pronunciation Test
3. Fry Phonetically Regular Words Oral Reading Test

The sub-sample groups would be assumed to be of equivalent ability by virtue of their random selection. An analysis of variance of the Pintner raw score means for the sub-sample was run as an additional assurance that this was indeed the case. Results of this analysis are presented in the following table.

TABLE XXXII

RAW SCORE MEANS OF THE SECOND GRADE SUB-SAMPLE AND RESULTS OF THE ANALYSIS OF VARIANCE OF THE PINTNER-CUNNINGHAM PRIMARY TEST, FORM A (SEPT., 1964)

	Basal Reader Program (N=7)		Modified Linguistic Materials (N=7)		Linguistic Readers (N=7)		F	Significance Level *
	Mean	S.D.	Mean	S.D.	Mean	S.D.		
Pintner-Cunningham (Raw Score)	42.09	1.69	38.86	3.50	40.31	4.23	1.66	N.S.

* F.95 = 3.55, with 2 and 18 degrees of freedom.

The nonsignificant F is assurance that the three sub-sample groups were of equivalent aptitude as measured by the Pintner-Cunningham test.

The data for the Analysis of Covariance for the Gilmore Oral Reading Test is summarized in Table XXXIII.

TABLE XXXIII

ANALYSIS OF COVARIANCE OF GILMORE ORAL READING TEST GIVEN MAY, 1966

Criterion	Covariate	Source of Variation	SS	df	MS	F*	Sig.
Gilmore Accuracy	Stan. Word Read. 9-65	Between	.65	2	.32	.95	N.S.
		Within	7.33	17	.43		
	Stan. Para. Mean. 9-65	Between	.29	2	.15	.39	N.S.
		Within	6.27	17	.37		
	Met. Read. Total 9-64	Between	.80	2	.40	.05	N.S.
		Within	13.39	17	.79		
	Pintner MA 9-64	Between	.40	2	.20	.02	N.S.
		Within	12.68	17	.75		
Gilmore Comprehension	Stan. Word Read. 9-65	Between	2.11	2	1.06	3.63	.05
		Within	4.94	17	.29		
	Stan. Para. Mean. 9-65	Between	1.61	2	.81	3.66	.05
		Within	3.73	17	.22		
	Met. Read. Total 9-64	Between	1.28	2	.64	1.36	N.S.
		Within	7.99	17	.47		
	Pintner MA 9-64	Between	.82	2	.41	.88	N.S.
		Within	7.91	17	.46		
Gilmore Rate	Stan. Word Read. 9-65	Between	55.60	2	27.80	.15	N.S.
		Within	3090.90	17	181.82		
	Stan. Para. Mean. 9-65	Between	78.03	2	39.02	.21	N.S.
		Within	3125.61	17	183.86		
	Met. Read. Total 9-64	Between	142.45	2	70.23	.30	N.S.
		Within	3955.18	17	232.65		
	Pintner MA 9-64	Between	132.8	2	66.4	.30	N.S.
		Within	3694.72	17	217.34		

* F.95 = 3.59 with 2 and 17 degrees of freedom.

When interpreting Table XXXII, it should be remembered that the analysis was performed on means of the classroom sub-sample means. One criterion measure in this analysis showed a significant F. Differences at the .05 level were apparent in comprehension when the factor of pre-treatment reading skill was held constant.

TABLE XXXIV

ANALYSIS OF COVARIANCE ADJUSTED MEANS OF THREE TREATMENT GROUPS FOR THE GILMORE ORAL READING TEST -- COMPREHENSION GIVEN MAY, 1966

Group	N	Covariate	Beta	Criterion Mean	Adj. Criterion Mean
Covariate Stanford Word Reading, Sept., 1965					
Linguistic	7	21.46	.1440	4.17	4.44 **
Basal Reader	7	24.91	.1084	3.94	3.72
Modified Ling.	7	23.66	.1583	3.81	3.36
Total		23.34	.1444		

$SD_{x.y}$	SE_D	df	Significant t	Significant Difference Between Adjusted Means
.5392	.2879	17	2.11 at .05	.61

** Differs significantly from Basal Reader and Modified Ling. means at .05.

Covariate Stanford Paragraph Meaning, Sept., 1965					
Linguistic	7	20.80	.1372	4.17	4.37 **
Basal Reader	7	24.41	.0825	3.94	3.71
Modified Ling.	7	22.24	.1152	3.81	3.84
Total		22.48	.1116		

$SD_{x.y}$	SE_D	df	Significant t	Significant Difference Between Adjusted Means
.4685	.2502	17	2.11 at .05	.53

** Differs significantly from Basal Reader and Modified Ling. means at .05.

Covariate Metropolitan Total Sept., 1964					
Linguistic	7	58.11	.0781	4.17	4.27
Basal Reader	7	63.96	.0555	3.94	3.64
Modified Ling.	7	56.70	.0651	3.81	4.01
Total		59.59	.0693		
Covariate Pintner Mental Age, Sept., 1964					
Linguistic	7	78.99	.1213	4.17	4.23
Basal Reader	7	81.56	.0733	3.94	3.74
Modified Ling.	7	78.34	.0953	3.81	3.94
Total		79.63	.1002		

Inspection of Table XXXIV will show that the mean of the Linguistic Group was significantly higher at the .05 level of confidence when pre-treatment reading achievement was the covariate than the means of the other two treatment groups. When readiness and intelligence factors were the covariate, the difference in means was not significantly different. However, the means of the Linguistic Group proved to be numerically superior to the other two under these conditions.

Since the Fs were so small in the Analysis of Covariance for Gilmore Accuracy and Rate, only the criterion and adjusted means for this analysis are presented in Table XXXIV.

TABLE XXXV

ANALYSIS OF COVARIANCE MEANS AND ADJUSTED MEANS FOR GILMORE ORAL READING TEST RATE AND ACCURACY, MAY, 1966

Group	Covariate	Accuracy Mean	Adj. Acc. Mean	Rate Mean	Adj. Rate Mean
Linguistic	Stanford Word Reading 9-65	4.23	4.51	88.50	91.62
Basal Reader		4.49	4.25	91.66	89.06
Modified Ling.		4.11	4.07	93.56	93.04
Linguistic	Stanford Para. Reading 9-65	4.23	4.43	88.50	90.61
Basal Reader		4.49	4.26	91.66	89.24
Modified Ling.		4.11	4.14	93.56	93.86
Linguistic	Metropolitan Total 9-64	4.23	4.30	88.50	89.24
Basal Reader		4.49	4.26	91.66	89.48
Modified Ling.		4.11	4.26	93.56	95.00
Linguistic	Pintner Mental Age 9-64	4.23	4.28	88.50	89.13
Basal Reader		4.49	4.33	91.66	89.06
Modified Ling.		4.11	4.22	93.56	94.81

Differences between means N.S.

No differences of any significance are evident between the means of the three treatment groups on the criteria of rate and accuracy. It can be assumed that the three experimental treatments provided for development of these skills equally well.

Data summarizing the Analysis of Covariance for the Gates Word Pronunciation Test and the Fry Phonetically Regular Words Test is presented in Table XXXVI.

TABLE XXXVI

ANALYSIS OF COVARIANCE FOR GATES WORD PRONUNCIATION AND FRY PHONETICALLY REGULAR WORDS TEST GIVEN MAY, 1966

Criterion	Covariate	Source of Variation	S.S.	df	M.S.	F.*	Sig.
Gates Test	Stan. Word Read. 9-65	Between	44.08	2	22.04	3.09	N.S.
		Within	121.15	17	7.13		
	Stan. Para. Mean 9-65	Between	36.75	2	18.37	2.82	N.S.
		Within	110.70	17	6.51		
	Met. Read. Total 9-64	Between	42.36	2	21.18	1.12	N.S.
		Within	320.22	17	18.84		
	Pintner MA 9-64	Between	28.59	2	14.30	.84	N.S.
		Within	285.95	17	16.82		
Fry Test	Stan. Word Read. 9-65	Between	121.26	2	60.63	3.17	N.S.
		Within	324.22	17	19.07		
	Stan. Para. Mean 9-65	Between	111.85	2	55.92	3.57	N.S.
		Within	266.51	17	15.68		
	Met. Read. Total 9-64	Between	128.65	2	64.32	1.74	N.S.
		Within	627.89	17	36.93		
	Pintner MA 9-64	Between	89.88	2	44.94	1.12	N.S.
		Within	598.86	17	35.23		

*F.95 = 3.59 with 2 and 17 degrees of freedom.

No significant Fs indicating a difference in means of treatment groups on these two criteria appear. It can be noted that several of the F scores approach the .05 significance level. The criterion means and adjusted means from this analysis are presented in Table XXXVII.

TABLE XXXVII

ANALYSIS OF COVARIANCE MEANS AND ADJUSTED MEANS FOR THE GATES WORD PRONUNCIATION TEST AND THE FRY PHONETICALLY REGULAR WORDS GIVEN MAY,1966

Group	Covariate	Gates Mean	Adj. Gates Mean	Fry Mean	Adj. Fry Mean
Linguistic	Stan. Word Read. 9-65	25.07	26.79	29.03	31.30
Basal Reader		24.53	23.10	27.19	25.29
Modified Ling.		25.60	25.31	29.74	29.36
Linguistic	Stan. Para. Mean. 9-65	25.07	24.36	29.03	30.66
Basal Reader		24.53	23.82	27.19	25.32
Modified Ling.		25.60	24.89	29.74	29.98
Linguistic	Metropolitan Reading Total 9-64	25.07	25.82	29.03	29.78
Basal Reader		24.53	22.30	27.19	24.96
Modified Ling.		25.60	27.07	29.74	31.22
Linguistic	Pintner MA 9-64	25.07	25.43	29.03	29.52
Basal Reader		24.53	23.44	27.19	25.71
Modified Ling.		25.60	26.32	29.74	30.73

Differences between means N.S.

Pupils in the sub-sample submitted a writing sample for analysis. This was to make it possible to assess the child's ability to use words in written expression. The stories were written in response to a standard stimulus. No help was given by the teacher in spelling or sentence structure. The stories were evaluated in first draft form. That is, no corrections had been made in spelling, capitalization or punctuation. The stories were judged on the basis of the following criteria:

1. Number of running words -- an exact count of all words used by the child.
2. Number of different words -- a word that appeared more than once was counted as one word.
3. Words spelled correctly -- all words, regardless of number of times used, were counted if correctly spelled.
4. Polysyllabic words used -- all words of more than one syllable were counted.
5. Mechanics ratio scale -- the per cent of mechanics accuracy for capitalization, punctuation and indentation.

Table XXXVIII is a summary of the means achieved by the three groups on the above criteria.

TABLE XXXVIII

RESULTS OF A ONE WAY ANALYSIS OF VARIANCE OF THE SECOND GRADE WRITING SAMPLE TAKEN MAY, 1966

	Basal Reader Program (N=7)		Modified Linguistic Materials (N=7)		Linguistic Readers (N=7)		F	Sig. Level *
	Mean	S.D.	Mean	S.D.	Mean	S.D.		
Mechanics Ratio (% of Accuracy)	58.61	11.40	57.61	11.52	63.06	15.82	.34	N.S.
Number of Words Spelled Correctly	53.51	13.47	52.14	14.78	57.80	25.10	.18	N.S.
Number of Running Words	62.89	16.23	60.83	18.08	66.57	27.47	.13	N.S.
Number of Different Words	37.33	6.26	27.23	9.66	38.64	13.81	.04	N.S.
Number of Polysyllabic Words	13.34	4.42	13.47	4.14	17.33	8.68	.96	N.S.

*F.95 = 3.55 with 2 and 18 degrees of freedom.

These means were analyzed statistically by analysis of variance. No F approached significance.

The data presented in Table XXIV showed both the Linguistic Group and the Modified Linguistic Group to be superior to the Basal Group on the Stanford Achievement Test Spelling subtest. That test measured the children's ability to spell words in isolation. This statistical superiority was not evident when the children were required to use words in a free composition situation.

An attempt was made to analyze the attitudes of the children toward reading. It is reasonable to assume that children who are learning to read well and who find their reading instruction interesting and exciting will display a favorable attitude toward reading. It is possible that the method of instruction and materials used for instruction could shape the child's attitude toward reading. The instrument used for this purpose was the San Diego Pupil Attitude Inventory. This instrument does not seem to be appropriate for use with children of this age group. It was used in both the first and second grade studies because by joint agreement of the directors of the Cooperative Research Projects, data produced by this instrument was to be collected. The correlation of this inventory and all objective and subjective measures of reading skill was essentially a zero correlation. The means of the three treatment groups on the attitude inventory appear in Table XXXIX. Table XL is a summary of the Pearson Product-Moment Correlations of the inventory with several measures of reading skill.

TABLE XXXIX

RAW SCORE MEANS OF TREATMENT GROUPS AND RESULTS OF THE ANALYSIS OF VARIANCE OF THE SAN DIEGO PUPIL ATTITUDE INVENTORY (MAY, 1966)

	Basal Reader Program (N=7)		Modified Linguistic Materials (N=7)		Linguistic Readers (N=7)		F	Sig. Level *
	Mean	S.D.	Mean	S.D.	Mean	S.D.		
Number of Positive Responses	17.17	1.54	18.43	1.30	18.29	2.43	1.0	N.S.

*F.95 = 3.55

There were no significant differences in the number of positive responses elicited from pupils in the several treatment groups, as shown by the nonsignificant F in Table XXXIX.

TABLE XL

CORRELATIONS OF THE SAN DIEGO PUPIL ATTITUDE INVENTORY GIVEN MAY, 1966 WITH MEASURES OF READING AND RELATED SKILLS AT THE END OF THE SECOND GRADE INSTRUCTIONAL PERIOD

Objective Measures of Reading Skill	
Stanford Word Meaning	.09
Stanford Paragraph Meaning	.12
Stanford Spelling	.20
Stanford Word Study Skills	.10
Gilmore Accuracy	.05
Gilmore Rate	.07
Gilmore Comprehension	.04
Gates Test	.09
Fry Test	.05
Subjective Measures of Reading Skill	
Number of Books Read Completely	-.04
Number of Books Read Partially	.01
Eagerness to Read	.16
Maturity of Reading Choices	.12

r.13 significant at .01 level of confidence

Table XL indicates that no relationship exists between the San Diego Pupil Attitude Inventory and either objective or subjective measures of reading ability for children in this study.

A more realistic estimate of the child's attitude toward reading may be the amount of independent reading that he actually does. During the month of March a record was kept by each child of all the books he read. The pupil recorded the title, author, and a brief comment about the book and indicated whether he had read all or part of each book. Results of an analysis of variance of this reading are shown in Table XLI.

TABLE XLI

RAW SCORE MEANS OF TREATMENT GROUPS AND RESULTS OF THE ANALYSIS OF VARIANCE OF SUPPLEMENTARY BOOKS READ DURING MARCH, 1966

	Basal Reader Program (N=7)		Modified Linguistic Materials (N=7)		Linguistic Readers (N=7)		F	Sig. Level *
	Mean	S.D.	Mean	S.D.	Mean	S.D.		
Books Read Completely	3.81	2.84	5.34	2.93	9.14	5.28	3.55	.05
Books Read Partially	.53	.37	.54	.27	1.33	1.32	2.23	N.S.

* F.95 = 3.55 with 2 and 18 degrees of freedom.

The children in the Linguistic Group read a significantly greater number of books during the sampling period than did the Basal Reader Group. Other comparisons of means on this variable were not significant.

Comparison of Achievement of Pupils Across Treatment Groups

Ability Level Comparisons. One of the purposes of this study was to determine whether one of the treatment groups might prove superior for either boys or girls at different levels of ability. High ability pupils were defined as those pupils with a Pintner raw score above 44 in September, 1964, when the test was administered. Low ability pupils were defined as those with a raw score of 35 or less on the same test. Pupils whose raw score fell between 35 and 44 were defined as being middle ability pupils.

The means and standard deviations of pupils in the three ability levels according to treatment groups are presented in the following tables. No information is presented on the level of significance of difference between means. The randomization procedure in this study was to randomly assign treatment to classroom group. For this reason randomization on the basis of individual pupils cannot be assumed. However, examination of the means reveals some interesting trends. Table XLII is a comparison of the achievement of high ability boys.

TABLE XLII

MEANS AND STANDARD DEVIATIONS OF HIGH ABILITY BOYS IN THE THREE TREATMENT GROUPS ON ACHIEVEMENT VARIABLES AT THE END OF THE SECOND GRADE INSTRUCTIONAL PERIOD

Stanford Achievement Sub-tests Given May, 1966						
	Linguistic Group (N=22)		Basal Reader Group (N=21)		Modified Ling. Group (N=15)	
Variable	Mean	S.D.	Mean	S.D.	Mean	S.D.
Word Meaning	23.6	7.6	24.4	7.1	24.5	8.7
Paragraph Mean.	38.6	13.8	40.7	12.6	40.7	11.1
Spelling	18.2	7.2	16.4	6.2	18.2	7.4
Word Study	44.5	12.5	46.0	9.8	44.4	10.2
Gilmore Oral Reading, Gates, and Fry Tests Given May, 1966						
	(N=7)		(N=8)		(N-4)	
Gilmore Rate	96.9	17.5	102.0	24.8	96.0	8.5
Gilmore Acc.	5.8	2.0	5.4	1.4	4.3	8.5
Gilmore Comp.	5.9	2.2	4.4	1.1	3.8	.8
Gates Test	33.1	5.6	27.4	4.4	27.8	2.8
Fry Test	38.9	10.2	34.8	8.0	36.8	6.4

Examination of Table XLII reveals only minor differences between means for boys in this ability level. Because of the small differences involved, it cannot be assumed that one method is superior for high ability boys.

Table XLIII summarizes comparable data for boys in the middle ability range.

TABLE XLIII

MEANS AND STANDARD DEVIATIONS OF MIDDLE ABILITY BOYS IN THE THREE TREATMENT GROUPS ON ACHIEVEMENT VARIABLES AT THE END OF THE SECOND GRADE INSTRUCTIONAL PERIOD

Stanford Achievement Subtests Given May, 1966						
	Linguistic Group (N=22)		Basal Reader Group (N=21)		Modified Ling. Group (N=15)	
Variable	Mean	S.D.	Mean	S.D.	Mean	S.D.
Word Meaning	14.5	8.9	18.2	6.6	21.8	6.9
Paragraph Mean.	22.3	14.6	27.8	11.5	33.6	11.7
Spelling	10.1	6.9	9.8	6.1	13.9	6.5
Word Study	30.9	12.8	34.8	9.3	38.3	10.4
Gilmore Oral Reading, Gates, and Fry Tests Given May, 1966						
	(N=8)		(N=15)		(N=11)	
Gilmore Rate	70.5	20.5	82.8	32.3	99.8	26.2
Gilmore Acc.	4.2	1.9	3.5	1.1	4.1	1.0
Gilmore Comp.	3.9	1.5	3.5	1.1	3.9	1.3
Gates Test	24.9	9.3	20.7	6.2	26.8	8.3
Fry Test	28.5	14.7	19.8	10.9	30.5	10.1

Examination of Table XLIII reveals that the differences in achievement are much more pronounced for boys in this ability range. Table XLIV shows the Stanford raw scores as shown in Table XLIII converted to grade level scores. The difference in achievement in terms of grade level scores is summarized.

TABLE XLIV

COMPARISON OF GRADE LEVEL SCORES OF AVERAGE ABILITY BOYS IN THE THREE TREATMENT GROUPS ON STANFORD ACHIEVEMENT VARIABLES AT THE END OF THE SECOND GRADE INSTRUCTIONAL PERIOD *

Variable	Linguistic Grade Score	Basal Reader Grade Score	Modified Ling. Grade Score
Word Meaning	2.6	2.8	3.2
Paragraph Meaning	2.3	2.6	3.0
Spelling	2.6	2.5	3.1
Word Study	2.4	2.7	3.0

	Superiority of Mod. Ling. Over Linguistic in Grade Level Score	Superiority of Mod. Ling. Over Basal Reader Grade Level Score
Word Meaning	.6	.4
Paragraph Meaning	.7	.4
Spelling	.5	.6
Word Study	.6	.3

* Actual Grade Placement at time of testing 2.8.

In Table XLV, data is presented that compares achievement of low ability boys across treatment groups.

TABLE XLV

MEANS AND STANDARD DEVIATIONS OF LOW ABILITY BOYS IN THE THREE TREATMENT GROUPS ON ACHIEVEMENT VARIABLES AT THE END OF THE SECOND GRADE INSTRUCTIONAL PERIOD

	Stanford Achievement Subtests Given May, 1966					
	Linguistic Group (N=22)		Basal Reader Group (N=7)		Modified Ling. Group (N=15)	
Variable	Mean	S.D.	Mean	S.D.	Mean	S.D.
Word Meaning	14.5	6.5	16.7	7.7	17.5	7.0
Paragraph Mean.	21.5	11.1	24.7	15.1	24.4	8.9
Spelling	9.1	6.2	11.7	9.2	11.7	6.7
Word Study	27.5	9.1	35.9	13.7	30.5	7.5
	Gilmore Oral Reading, Gates, and Fry Tests Given May, 1966					
	(N=8)		(N=1)		(N=6)	
Gilmore Rate	73.5	45.1	90.0	0	91.0	37.1
Gilmore Acc.	2.6	1.7	6.0	0	3.5	.5
Gilmore Comp.	3.5	1.3	4.7	0	2.5	1.1
Gates Test	17.6	9.8	34.0	0	21.2	4.4
Fry Test	19.6	15.1	45.0	0	23.5	6.4

An overall comparison cannot be made in this instance because of the N of 1 in the sub-sample of the Basal Reader Group. The average difference between Grade Level Score Means for the Stanford Achievement variables is .25. The average standard error of measurement on these four subtests is .21. One can only assume that the three approaches are equally effective for boys at this level of ability.

Table XLVI is a comparison of means and standard deviations of high ability girls across treatment groups.

TABLE XLVI

MEANS AND STANDARD DEVIATIONS OF HIGH ABILITY GIRLS IN THE THREE TREATMENT GROUPS ON ACHIEVEMENT VARIABLES AT THE END OF THE SECOND GRADE INSTRUCTIONAL PERIOD

Variable	Linguistic Group (N=33) Mean	S.D.	Basal Reader Group (N=30) Mean	S.D.	Modified Ling. Group (N=24) Mean	S.D.
Word Meaning	24.2	6.6	22.4	5.7	25.6	5.0
Paragraph Mean.	40.2	10.4	39.4	8.8	41.8	7.8
Spelling	19.7	6.9	15.8	7.0	19.7	6.8
Word Study	44.7	10.7	45.0	10.6	45.0	9.1
	Gilmore Oral Reading, Gates, and Fry Tests Given May, 1965					
	(N=13)		(N=14)		(N=9)	
Gilmore Rate	97.4	24.3	98.6	18.9	98.0	15.0
Gilmore Acc.	5.2	1.8	5.4	2.0	4.9	.9
Gilmore Comp.	4.5	1.7	4.5	1.4	5.1	2.2
Gates Test	29.5	8.2	27.3	6.8	31.0	3.4
Fry Test	34.8	11.6	32.4	10.2	37.9	3.5

A summary of the relative achievement of girls in the middle range of ability is shown in Table XLVII.

TABLE XLVII

MEANS AND STANDARD DEVIATIONS OF MIDDLE ABILITY GIRLS IN THE THREE TREATMENT GROUPS ON ACHIEVEMENT VARIABLES AT THE END OF THE SECOND GRADE INSTRUCTIONAL PERIOD

Variable	Linguistic Group (N=19) Mean	S.D.	Basal Reader Group (N=19) Mean	S.D.	Modified Ling. Group (N=21) Mean	S.D.
Stanford Achievement Subtests Given May, 1966						
Word Meaning	19.7	6.8	18.4	7.4	20.3	8.3
Paragraph Mean.	31.2	11.4	33.4	10.6	30.7	11.3
Spelling	14.5	6.3	13.6	5.9	15.7	6.5
Word Study	36.7	11.9	38.8	11.7	39.0	10.0
Gilmore Oral Reading, Gates, and Fry Tests Given May, 1966						
	(N=9)		(N=8)		(N=13)	
Gilmore Rate	102.7	42.8	93.8	26.4	90.0	26.0
Gilmore Acc.	3.7	1.0	4.5	1.0	4.0	.8
Gilmore Comp.	3.8	1.1	3.9	1.9	3.9	1.9
Gates Test	25.2	8.5	26.9	5.9	25.7	7.7
Fry Test	29.9	11.5	29.8	12.9	29.1	11.6

The means for all variables are so close in this case that it can be assumed that girls of average ability in this study achieved equally well in all three treatment groups.

Table XLVIII is a summary of means and standard deviations for low ability girls across treatment groups.

TABLE XLVIII

MEANS AND STANDARD DEVIATIONS OF LOW ABILITY GIRLS IN THE THREE TREATMENT GROUPS ON ACHIEVEMENT VARIABLES AT THE END OF THE SECOND GRADE INSTRUCTIONAL PERIOD

Stanford Achievement Subtests Given May, 1966

Variable	Linguistic Group (N=15) Mean	S.D.	Basal Reader Group (N=6) Mean	S.D.	Modified Ling. Group (N=19) Mean	S.D.
Word Meaning	16.4	6.5	17.7	3.8	15.2	6.7
Paragraph Mean.	23.0	14.6	27.7	12.0	21.8	12.4
Spelling	12.7	8.8	11.3	6.7	11.3	6.7
Word Study	30.7	10.2	32.5	12.7	29.4	10.2
Gilmore Oral Reading, Gates, and Fry Tests Given May, 1966						
	(N-5)		(N-4)		(N=7)	
Gilmore Rate	81.6	36.6	84.0	45.7	83.1	35.9
Gilmore Acc.	3.5	1.4	3.6	1.0	3.5	1.3
Gilmore Comp.	3.9	1.6	3.5	1.2	2.9	1.4
Gates Test	16.2	11.3	20.8	4.3	18.9	8.7
Fry Test	17.0	15.0	20.0	11.4	19.9	15.0

The differences in achievement means on the Stanford variables are less than or equal to the Standard Error of Measurement for that test so it can only be assumed that performance across treatment groups was equal for girls in this ability range. The differences are similarly small on the other variables. Neither treatment can be interpreted as superior for girls of this sort under the conditions prevailing in this study.

In summary, the three treatments were equally effective for children of three ability levels.

Boys often appear to be at a disadvantage when compared to girls in learning to read. This is particularly true in comparisons of reading accomplishment at primary level. This trend is also evident in the greater number of boys who require corrective or remedial reading treatment. In order to determine whether this same disadvantage for boys would appear under conditions of this study when three widely contrasting approaches to instruction were used, comparisons were made of the mean achievement scores of boys and girls in each of the three treatment groups. Results of this comparison appear in the following tables. Table XLIX is a presentation of this comparative data for pupils of high ability.

TABLE XLIX

COMPARISON OF MEANS FOR HIGH ABILITY BOYS AND GIRLS IN EACH OF THE THREE TREATMENT GROUPS ON ACHIEVEMENT VARIABLES AT THE END OF THE SECOND GRADE INSTRUCTIONAL PERIOD

Stanford Achievement Subtests Given May, 1966

	Linguistic Group		Basal Reader Group		Mod. Linguistic Group	
Variable	Boys N=22 Mean	Girls N=33 Mean	Boys N=21 Mean	Girls N=30 Mean	Boys N=15 Mean	Girls N=24 Mean
Word Meaning	23.6	24.2	24.4	22.4	24.5	25.6
Paragraph Meaning	38.6	40.2	40.7	39.4	40.7	41.8
Spelling	13.2	19.7	16.4	15.8	18.2	19.7
Word Study	44.5	44.7	46.0	45.0	44.4	45.0

Gilmore Oral Reading Test, Gates, and Fry Tests Given May, 1966

	Boys N=7	Girls N=13	Boys N=8	Girls N=14	Boys N=4	Girls N=9
Gilmore Rate	96.9	97.4	102.0	98.6	96.0	98.0
Gilmore Accuracy	5.8	5.2	5.4	5.4	4.3	4.9
Gilmore Comp.	5.9	4.5	4.4	4.5	3.8	5.1
Gates Test	33.1	29.5	27.4	27.3	27.8	31.0
Fry Test	38.9	34.8	34.8	32.4	36.8	39.7

The differences in mean achievement as shown in Table XLIX are very slight. They are so slight that no claim can be made for a given treatment's superiority as a mode of instruction for either sex at this level of ability.

Table L is a summary of comparable data for pupils in the middle range of ability.

TABLE L

COMPARISON OF MEANS FOR MIDDLE ABILITY BOYS AND GIRLS IN EACH OF THE THREE TREATMENT GROUPS ON ACHIEVEMENT VARIABLES AT THE END OF THE SECOND GRADE INSTRUCTIONAL PERIOD

Stanford Achievement Subtests Given May, 1966

	Linguistic Group		Basal Reader Group		Mod. Linguistic Group	
Variable	Boys N=24 Mean	Girls N=19 Mean	Boys N=32 Mean	Girls N=19 Mean	Boys N=33 Mean	Girls N=21 Mean
Word Meaning	14.5	19.7	18.2	18.4	21.8	20.3
Paragraph Meaning	22.3	31.2	27.8	33.4	33.6	30.7
Spelling	10.1	14.5	9.8	13.6	13.9	15.7
Word Study	30.9	36.7	34.8	38.8	38.3	39.0

Gilmore Oral Reading Test, Gates, and Fry Tests Given May, 1966

	Boys N=8	Girls N=9	Boys N=15	Girls N=18	Boys N=11	Girls N=13
Gilmore Rate	70.5	102.7	82.8	93.8	98.8	90.0
Gilmore Accuracy	4.2	3.7	3.5	4.6	4.1	4.0
Gilmore Comp.	3.9	3.8	3.5	3.9	3.9	3.9
Gates Test	24.9	25.2	20.7	26.9	26.8	25.7
Fry Test	28.5	29.9	19.8	29.8	30.5	29.1

Examination of the table above will reveal that on the Stanford variables boys and girls in this ability level are equally successful when the Modified Linguistic Material is used for instruction. In the case of the other two methods, boys are shown to be at a disadvantage in every case. This disadvantage amounts to an average of .5 in terms of grade level score for boys in the Linguistic Group. The disadvantage amounts to .3 in terms of grade level score for the Basal Reader Group. Under the conditions prevailing in this study, it appears that the Modified Linguistic approach tended to minimize the disadvantage in achieving reading skill for average ability boys.

Similar comparisons are made for achievement means of low ability children in Table LI.

TABLE LI

COMPARISON OF MEANS FOR LOW ABILITY BOYS AND GIRLS IN EACH OF THE THREE TREATMENT GROUPS ON ACHIEVEMENT VARIABLES AT THE END OF THE SECOND GRADE INSTRUCTIONAL PERIOD

Stanford Achievement Subtests Given May, 1966

Variable	Linguistic Group		Basal Reader Group		Mod. Linguistic Group	
	Boys N=22 Mean	Girls N=15 Mean	Boys N=7 Mean	Girls N=6 Mean	Boys N=13 Mean	Girls N=19 Mean
Word Meaning	14.5	16.4	16.7	17.7	17.5	15.2
Paragraph Meaning	21.5	23.0	24.7	27.7	24.4	21.8
Spelling	9.1	12.7	11.7	11.3	11.7	11.3
Word Study	27.5	30.7	35.9	32.5	30.5	29.4

Gilmore Oral Reading Test, Gates, and Fry Tests Given May, 1966

	Boys N=8	Girls N=5	Boys N=1	Girls N=4	Boys N=6	Girls N=7
Gilmore Rate	73.5	81.6	90.0	84.0	91.0	83.1
Gilmore Accuracy	2.6	3.5	6.0	3.6	3.5	3.5
Gilmore Comp.	3.5	3.9	4.7	3.5	2.5	2.9
Gates Test	17.6	16.2	34.0	20.8	21.2	18.9
Fry Test	19.6	17.0	45.0	20.0	23.5	19.9

Here again, the differences between means of boys and girls in the three treatment groups are minute. The largest differences, those in the Linguistic Group, average very close to the Standard Error of

Measurement for those subtests. No convincing evidence can be found to indicate that either of the three treatments is superior for either sex at this level of ability.

Limitations of the Study

The Teacher Variable.

Examination of the tables of data in this chapter reveals in most cases a very large within groups sum of squares. This can be interpreted as within group variation from sources other than treatment. Since the groups were equated statistically on the variables of readiness, mental ability, chronological age and achievement, this leaves as the major uncontrolled source of error in experimentation of this type the effectiveness of the teacher. In this section, examination will be made of some gross differences in achievement of classroom groups within treatments to demonstrate this point. The achievement of the pupils in two classrooms receiving the same experimental treatment is compared in Table LII.

TABLE LII

COMPARISON OF TWO CLASS GROUPS OF EQUAL ABILITY AND RECEIVING THE SAME EXPERIMENTAL TREATMENT ON STANFORD ACHIEVEMENT SUBTEST SCORES AT THE END OF THE SECOND GRADE, MAY 1966

Classroom A				Classroom B			
MA* 44.64	Readiness ** 72			MA * 43.41	Readiness * 65		
Stanford Variable	Mean	S.D.	Grade Score	Stanford Variable	Mean	S.D.	Grade Score
Word Meaning	21.20	7.22	3.1	Word Meaning	25.94	6.19	3.7
Par. Meaning	35.80	11.86	3.1	Par. Meaning	44.47	7.07	4.1
Spelling	16.60	6.10	3.4	Spelling	19.47	6.25	3.6
Word Study Sk.	36.32	9.83	2.8	Word Study Sk.	47.41	8.38	4.2
Average Achievement			3.1	Average Achievement			3.9
*Pintner Raw Score, Sept., 1964				* Metropolitan Total Score, Sept., 1964			

Examination of Table LII reveals that the two classrooms were approximately equal in average mental ability and readiness at the beginning of grade 1. Classroom B was slightly inferior to Classroom A on these variables. When a comparison of achievement is made, Classroom B is superior on every criterion. The achievement of this group exceeds that of Classroom A by the following amounts:

Word Meaning	.6 grade
Paragraph Meaning	1.0 grade
Spelling	.2 grade
Word Study Skills	1.4 grade

The differences in Word Study Skills and Paragraph Meaning are particularly striking since they represent the two most important skills to be acquired by the child at primary level. The former represents his ability to use a variety of skills for independent analysis and recognition of unfamiliar words. The latter represents his ability to utilize these skills in a functional reading situation.

The inferior performance of Classroom A in comparison to Classroom B cannot be attributed to substandard school environment in terms of physical plant. This classroom is located in a new modern building that is well equipped with an abundance of up to date instructional materials and equipment. Materially it is superior to the school plant occupied by Classroom B. The critical factor that made the difference was the contrasting professional competencies of the two teachers. This contrast was outstandingly evident to the member of the university research staff who visited the classrooms approximately once a week during the instructional period.

The achievement of pupils in two more classrooms within this same treatment group is contrasted in Table LIII. It can be noted that these two groups have lower potential as measured on pre-experiment tests given at the beginning of grade 1. The average mental ability and readiness as measured by these tests is equal for the two class groups.

TABLE LIII

COMPARISON OF TWO CLASS GROUPS OF EQUAL ABILITY AND RECEIVING THE SAME EXPERIMENTAL TREATMENT ON STANFORD ACHIEVEMENT SUBTEST SCORES AT THE END OF THE SECOND GRADE, MAY 1966

Classroom C MA*34.90 Readiness** 50				Classroom D MA* 34.43 Readiness* 50			
Stanford Variable	Mean	S.D.	Grade Score	Stanford Variable	Mean	S.D.	Grade Score
Word Meaning	21.63	7.05	3.2	Word Meaning	11.95	7.02	2.1
Para. Meaning	29.82	12.64	2.8	Para. Meaning	16.87	12.37	2.0
Spelling	17.00	8.21	3.4	Spelling	7.43	5.59	2.3
Word Study Sk.	38.00	16.11	3.0	Word Study Sk.	23.17	6.42	1.7
Average Achievement			3.1	Average Achievement			2.0
* Pintner Raw Score, Sept., 1964				* Metropolitan Total Score, Sept.,1964			

Examination of Table LIII, which presents achievement data for two classrooms equated on ability and readiness factors, shows the following differences in achievement.

Word Meaning	1.1 grade
Paragraph Meaning	.8 grade
Spelling	1.1 grade
Word Study Skills	1.3 grade

These differences in achievement can only be interpreted as gross. In Classroom C the average achievement on these four important skills is at or above grade placement at time of testing in every instance. (Grade placement at time of this testing in May is 2.8) The other group of children averages .8 year retardation in reading skills with a retardation of 1.1 year in the weakest skill.

Once again, this difference cannot be attributed to a substandard material school environment. The physical plant of the school of Classroom D is modern and well equipped and located in a suburban setting. Classroom C is located in an older school in an urban environment. It does not compare favorably with the former school in attractiveness or amount of modern instructional aids. This school has a large proportion of pupils from a low socio-economic background.

Both teachers in this comparison are women with equal experience teaching primary grades. Each has had in excess of ten years of teaching experience at this level and both are of approximately the same age. The two teachers are comparable on all data collected. The two differ widely in their understanding of children, the reading skills to be mastered at primary level, and in their flexibility and ingenuity in meeting the unique needs of individual pupils. In short, pronounced differences are to be observed in professional competency.

This problem of within group variability can be demonstrated in another way. The range of scores on the four Stanford Variables can be compared within a given treatment group. This is done in Table LIV. The treatment group is not the one analyzed above.

TABLE LIV

RANGE OF ACHIEVEMENT ON FOUR STANFORD SUBTESTS WITHIN ONE TREATMENT GROUP AT THE END OF GRADE TWO, MAY 1966

	Word Meaning	Paragraph Meaning	Spelling	Word Study Skills
High Mean Score*	3.5	3.4	3.3	4.2
Low Mean Score	2.5	2.5	2.6	2.4
Difference Between High and Low	1.0	.9	.7	1.8

*Scores shown as Grade Level Scores and represent classroom means.

Data in Table LIV summarizes achievement of six classrooms within a single treatment group. These six classrooms had average mean ability scores that fell within the middle ability range as defined on page 89. One classroom from this treatment group does not enter into the comparison since the mean ability of that group fell in the high ability range as previously defined.

It should be noted that the largest spread in achievement is a spread of almost two school years in Word Study Skills. There is a difference of a full year in achievement between the highest and lowest classroom in the ability to read and interpret words and almost a full year in the ability to read connected discourse.

This data is one further emphasis on the importance of teacher competency in developing primary reading skills. In equated groups such as are described in Tables LII and LIII differences in achievement of pupils may represent at least four weaknesses in the professional competencies of teachers. These are: (1) Lack of knowledge of skills to be developed at primary level and their sequence of development. (2) Lack of ability to develop the skills that are needed. (3) Inability to determine the degree to which skills have been mastered. (4) Lack of sensibility to the learning needs of individual children and the flexibility necessary to meet these individual needs.

In summary, a major limitation of a study of this type is the uncontrolled variable of teacher competency. This variable appears to account for greater differences in pupil achievement than the treatment variable making it very difficult to assess true treatment effect. Under these conditions, difference in achievement due to treatment effect must be quite large to show a significant difference.

Correlations Between Pre- and Post-Experiment Measures

Pearson product-moment correlations were computed for various pre- and post-experiment measures. The Correlation Matrix is presented in Table LV. Correlations of .13 or above differ significantly from zero at the .01 level of confidence.

TABLE LV -- CORRELATION MATRIX *

		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
Chronological Age 9/64	1		21	09	07	14	12	06	24	03	27	06	09	14	21	10	15	01	-02	01	-04	-04	-02	-01	-03	01	00	05	-04	-02	00
Mental Age 9/64	2			51	43	48	48	45	58	43	41	38	52	59	51	49	69	52	53	51	43	54	51	53	46	43	51	47	54	46	50
Murphy-Durrell Phonemes	3				51	53	55	40	36	26	43	36	38	54	39	54	63	55	54	54	50	61	57	56	55	49	62	51	54	47	56
Murphy-Durrell Capitals	4					80	95	45	33	19	35	34	40	60	37	78	70	49	52	45	44	54	49	50	36	48	46	45	49	47	45
Murphy-Durrell Lower Case	5						92	48	32	17	30	35	38	61	39	79	70	56	56	45	48	58	52	55	40	51	50	48	51	48	48
Murphy-Durrell Total	6							49	34	20	36	36	41	63	40	83	74	56	58	48	50	60	55	56	40	53	52	50	54	52	50
Murphy-Durrell Lrng. Rate	7								30	18	25	23	33	45	31	52	51	46	50	32	36	42	38	43	30	35	35	42	41	40	36
Thurstone Pattern Copying	8									23	28	23	38	40	57	32	52	34	32	32	29	36	30	34	28	27	29	28	31	28	33
Thurstone Ident. Forms	9										28	20	25	30	28	20	35	30	28	26	22	27	27	29	26	23	26	24	29	23	29
Metropolitan Word Meaning	10											42	33	44	31	36	65	42	43	59	38	46	42	43	50	30	43	44	48	32	38
Metropolitan Listening	11												32	42	33	34	61	31	36	39	29	39	34	35	32	27	36	36	40	27	31
Metropolitan Matching	12													49	37	39	68	63	45	43	34	47	38	43	32	33	39	39	45	34	37
Metropolitan Numbers	13														47	62	85	54	57	53	49	57	52	55	47	48	54	49	54	44	51
Metropolitan Copying	14															37	65	27	33	32	19	35	29	32	33	25	31	24	31	25	30
Metropolitan Alphabet	15																76	54	58	44	50	58	55	57	41	56	52	50	31	52	50
Metropolitan Total	16																	61	66	63	53	68	60	63	54	54	61	58	65	52	58
Stanford Word Rdg. Gr. 1	17																		81	52	75	79	83	80	54	76	79	76	74	76	70
Stanford Para.Rdg. Gr. 1	18																			56	77	79	80	84	55	71	70	71	74	70	67
Stanford Vocabulary Gr. 1	19																				53	61	53	53	68	40	54	55	60	40	50
Stanford Spelling Gr. 1	20																					77	79	78	50	77	71	70	72	71	66
Stanford Word Study Gr. 1	21																						80	80	55	73	79	74	74	69	70
Stanford Word Rdg. Gr. 2-1	22																							89	58	81	83	76	74	76	70
Stanford Para.Rdg. Gr. 2-1	23																								55	79	78	71	74	70	67
Stanford Vocab. Gr. 2-1	24																									46	61	55	60	40	50
Stanford Spelling Gr. 2-1	25																										77	70	72	71	66
Stanford Word Stdy.Gr. 2-1	26																											74	74	69	70
Stanford Word Mng. Gr. 2-2	27																												87	81	82
Stanford Para.Mng. Gr. 2-2	28																													79	75
Stanford Spelling Gr. 2-2	29																														75
Stanford Word Stdy.Gr. 2-2	30																														

* Based on individual observations. Decimal points omitted to save space.
P = .01 when r = .13 or higher.

Pearson Product-Moment Correlations were also computed to determine whether a relationship existed between certain other factors operating within the classroom and objective and subjective measures of reading skill. Tables LVI through LIX contain this data.

TABLE LVI

CORRELATION OF PUPIL ATTENDANCE IN GRADE TWO WITH MEASURES OF READING AND RELATED SKILLS AT THE END OF THE SECOND GRADE INSTRUCTIONAL PERIOD

Objective Measures of Reading Skill		Subjective Measures of Reading Skill	
Stanford Word Meaning	-.10	Books Read Completely	-.20
Stanford Paragraph Meaning	-.06	Books Read Partly	-.12
Stanford Spelling	-.17	Eagerness to Read	-.08
Stanford Word Study Skills	-.08	Maturity of Reading Choices	-.04
Gilmore Rate	-.03		
Gilmore Accuracy	-.07		
Gilmore Comprehension	.04		
Gates Test	-.11		
Fry Test	-.14		

r = .13 significant at .01 level

The correlations between pupil attendance and reading achievement were either the equivalent of a zero correlation or so small as to be of no practical importance.

TABLE LVII

CORRELATIONS OF TEACHER ATTENDANCE DURING THE INSTRUCTIONAL PERIOD WITH MEASURES OF READING AND READING RELATED SKILLS AT THE END OF THE SECOND GRADE INSTRUCTIONAL PERIOD

Objective Measures of Reading Skill	
Stanford Word Meaning	-.07
Stanford Paragraph Meaning	-.11
Spelling	-.10
Word Study Skills	-.12
Gilmore Accuracy	-.16
Gilmore Rate	.03
Gilmore Comprehension	.04
Gates Test	.05
Fry Test	.05
Subjective Measures of Reading Skill	
Books Read Completely	-.05
Books Read Partly	.01
Eagerness to Read	-.04
Maturity of Reading Choices	-.13

r = .13 significant at .01 level

Correlations between teacher attendance and pupil achievement were essentially zero.

Table LVIII contains correlational data related to teacher rating and pupil achievement. Interpretation of the table should be made in terms of the discussion on methods of rating discussed above and in terms of data presented above on the topic of within treatment variability.

TABLE LVIII

CORRELATIONS OF TEACHER RATING WITH MEASURES OF READING AND RELATED SKILLS AT THE END OF THE SECOND GRADE INSTRUCTIONAL PERIOD

Objective Measures of Reading Skill	
Stanford Word Meaning	.29
Stanford Paragraph Meaning	.29
Stanford Spelling	.28
Stanford Word Study Skills	.31
Gilmore Accuracy	.35
Gilmore Rate	-.02
Gilmore Comprehension	.25
Gates Test	.30
Fry Test	.31
Subjective Measures of Reading Skill	
Books Read Completely	.18
Books Read Partly	-.07
Eagerness to Read	.48
Maturity of Reading Choices	.59

r = .13 significant at .01 level of confidence

These very low correlations can only be interpreted as being indicative of the insensitivity of a blanket numerical rating technique as an assessment of teacher competency.

TABLE LIX

CORRELATIONS OF READING INSTRUCTIONAL TIME, SUPPORTING TIME, AND TOTAL READING TIME WITH MEASURES OF READING AND RELATED SKILLS AT THE END OF THE SECOND GRADE INSTRUCTIONAL PERIOD

Objective Measures of Reading		Subjective Measures of Reading	
Stanford Word Meaning	.12	Books Read Completely	-.14
Stanford Paragraph Meaning	.15	Books Read Partly	-.14
Stanford Spelling	.09	Eagerness to Read	-.03
Stanford Word Study Skills	.11	Maturity of Reading Choices	-.08
Gilmore Accuracy	.01		
Gilmore Rate	.24		
Gilmore Comprehension	-.05		
Gates Test	.11		
Fry Test	.12		

Supporting Time for Reading

Objective Measures of Reading		Subjective Measures of Reading	
Stanford Word Meaning	-.10	Books Read Completely	.18
Stanford Paragraph Meaning	-.13	Books Read Partly	.19
Stanford Spelling	-.01	Eagerness to Read	-.08
Stanford Word Study Skills	-.08	Maturity of Reading Choices	-.06
Gilmore Accuracy	-.12		
Gilmore Rate	-.12		
Gilmore Comprehension	-.16		
Gates Test	-.12		
Fry Test	-.11		

Total Time for Reading

Objective Measures of Reading		Subjective Measures of Reading	
Stanford Word Meaning	-.03	Books Read Completely	.10
Stanford Paragraph Meaning	-.04	Books Read Partly	.12
Stanford Spelling	.05	Eagerness to Read	-.10
Stanford Word Study Skills	-.02	Maturity of Reading Choices	-.11
Gilmore Accuracy	-.11		
Gilmore Rate	.02		
Gilmore Comprehension	-.19		
Gates Test	-.06		
Fry Test	-.04		

r = .13 significant at .01 level

The low correlations presented in Table LIX should not be interpreted to mean that the amount of time devoted to primary reading instruction is immaterial. Rather it reflects the fact that only minor differences in instructional time existed between treatment groups in this study. This study was not designed to make a valid comparison of the time variable. The table indicates that the minor uncontrollable differences in instructional time between treatment groups could not have distorted measurement of treatment to any important degree.

CHAPTER V -- RESULTS, CONCLUSIONS, AND IMPLICATIONS

Introduction

The purpose of this study was to investigate possible differential effects of three contrasting approaches to primary reading instruction on the achievement of pupils at the end of grade 2. The pupils who were studied at second grade level during the 1965-66 school year had all participated in the similar study of first grade reading achievement the previous year. All remained in the same instructional treatment group throughout the two year period.

Achievement of the three treatment groups was evaluated in the areas of word and paragraph reading, comprehension, reading accuracy and rate of reading. Skills in the supporting area of word analysis were evaluated. The reading related skills of spelling and written composition were studied. Comparison among treatment groups was made on the amount of free reading done by the pupils and their attitudes toward reading.

Comparisons on the above skills were made for the total treatment groups. In addition, performance on these skills was compared across treatment groups for subgroups formed on the basis of ability level and sex.

Twenty-one second grade classrooms of children in three central New York school districts were the subjects in the study. At the beginning of first grade each class had been randomly selected to receive instruction using one of the following media:

1. a basal reader series
2. a modified linguistic (analytic phonic) program
3. a linguistic series

Pre-treatment reading readiness and intelligence testing was conducted in September, 1964 before first grade instruction was begun. In September, 1965 achievement tests were given to determine the pre-second grade skills status of the population. Post-treatment achievement testing was carried out at the close of the 140 day second grade instructional period in May, 1966. The results of these tests and other information is summarized below.

Results

1. The treatment groups did not differ significantly in intelligence as measured on a group test at beginning first grade.
2. Analysis of 18 reading readiness subscores revealed no significant differences between treatment groups except for one subscore. A significant difference in Auditory Discrimination-Rhyming Words was found to favor the Basal Reader Group.
3. No significant differences were found in reading or related skills achievement level of the three treatment groups at the beginning of the second grade instructional period.
4. No significant differences between treatment groups were found in pre-first grade school attendance.

Examination of pre-experimental data revealed that no significant differences existed between groups at the beginning of the second grade instructional period.

The post-experiment measure of achievement administered to all pupils was the Stanford Achievement Test Primary II Battery, Form W. In addition, The Gilmore Oral Reading Test, The Gates Word Pronunciation Test, The Fry Phonetically Regular Words Oral Reading Test, and The San Diego Pupil Attitude Inventory were administered to a randomly selected subsample of 50 children from each treatment group. Members of this subsample each prepared a sample of written composition for analysis.

An analysis of Covariance of post-treatment test results revealed the following:

1. Both the Linguistic Group and the Modified Linguistic Group means were significantly superior to the mean of the Basal Reader Group on the Stanford Word Meaning Subtest when the factor of pre-second grade treatment reading skill was held constant. The means of the Linguistic and Modified Linguistic groups were not significantly different.
2. Differences between the three treatment groups in Paragraph Meaning of the Stanford Test were non-significant.
3. The means of the Linguistic and Modified Linguistic Groups were both significantly above the mean of the Basal Reader Group in spelling on the Stanford Test when the factors of pre-second grade treatment reading skills, readiness and intelligence were held constant. The means of the Linguistic and Modified Linguistic Groups did not differ significantly.

4. No significant differences in Stanford Word Study Skills were found between the three groups.
5. The mean of the Linguistic Group was significantly superior to the means of the other two groups on comprehension as measured by the Gilmore Oral Reading Test when the factor of pre-second grade treatment reading skill was held constant. The means of the Modified Linguistic and Basal Reader Groups did not differ significantly from each other on this variable.
6. No significant differences between means of the three treatment groups were found either in reading rate or accuracy as measured by the Gilmore Oral Reading Test.
7. There were no significant differences found between the groups in ability to read phonetically regular words presented in the Fry list.
8. The groups did not differ significantly in ability to read the Gates Word Pronunciation Test at the end of grade 2.
9. No significant differences were found when analysis was made of the written composition sample in number of words spelled correctly, number of running words, number of different words used, number of polysyllabic words used or percent of accuracy.
10. The treatment groups did not differ significantly in attitudes toward reading that could be measured with the San Diego Pupil Attitude Inventory.

11. The Linguistic Group read a significantly greater number of books as independent reading during the sampling period when this count was kept than did either of the other two treatment groups. The Modified Linguistic and Basal Groups did not differ significantly from each other on this variable.
12. The three treatments appeared to be equally successful for instructing boys in the high and low ability ranges.
13. All mean grade level scores on the four Stanford Achievement variables of average ability boys who were instructed in the Modified Linguistic materials were above actual grade placement at time of final testing. Average ability boys instructed in the basal reader materials achieved a mean score just at grade placement on one variable -- word meaning. the other three means were below actual grade placement. Average ability boys instructed in the Linguistic materials had no mean achievement score at or above actual grade placement on the Stanford Achievement variables.
14. The three treatments appeared to be equally effective for instruction of girls at all three levels of ability.

A comparison was made of the relative achievement of boys and girls in subgroups based on ability level to determine whether either of the treatments produced higher achievement scores for a given subgroup than did another. A summary of the findings based on the Stanford Achievement variables follows:

1. At the high ability level boys and girls showed no differences in achievement when all children of this ability level

were considered.

2. Boys and girls at the high ability level achieved equally well in each of the treatment groups.
3. All means on the Stanford Subtests were above actual grade placement norms at time of testing for both boys and girls in this high ability group regardless of treatment.
4. At middle ability level girls achieved higher than boys when all children in the experiment were considered.
5. Average ability girls achieved equally well in each of the three treatment groups. All means for girls of this ability were at or above actual grade placement norms at time of testing.
6. There were no differences in achievement between boys and girls of average ability who were instructed in the Modified Linguistic materials. Both boys and girls achieved above actual grade placement norms in this group.
7. Average ability boys in the Linguistic and Basal Reader Groups did not achieve at as high a level as girls in the same treatment groups. In both treatment groups achievement means for boys on the Stanford variables were below actual grade placement at time of testing.
8. At low ability level boys and girls achieved equally well when all children in the experiment at this ability level were considered.
9. There were no differences in achievement between boys and girls of low ability who were instructed in the Basal Reader

materials.

10. Low ability boys who were instructed in the Modified Linguistic materials achieved slightly above the level of girls in this group on the four Stanford variables.
11. Low ability boys who received instruction in the Linguistic materials achieved slightly below the level of girls in this group.
12. The average Stanford Achievement means for low ability boys and girls were below the actual grade placement at time of testing.

Conclusions

All three approaches to primary instruction that were studied proved to be effective for reading instruction at second grade level. Although some significant differences were noted in some of the subskills or related skills of the total reading process as they were measured in this study, none of the approaches was demonstrated to be superior in all aspects of reading.

When average achievement scores are considered each of the three groups was shown to be reading at an acceptable level at the end of grade 2.

The largest differences in achievement that were observed in this study were differences in classroom means within treatment groups. This was true even when the classroom groups were of similar home background and level of ability.

Implications for Further Study

1. The wide variation in achievement within treatment groups in this study points to the factor of teacher competency as being a more significant factor in pupil success at this level than materials or method. Asearching study of teacher and pupil behaviors that lead to success in reading is needed.
2. The fact that all three groups achieved equally well on comprehension as measured on the Stanford Paragraph meaning subtest indicates that further study of the role of teaching comprehension skills at primary level is needed. Two of the groups had received sequential instruction in development of comprehension skills. In the Linguistic Group this aspect of reading was deliberately de-emphasized as part of the rationale of the method. Systematic controlled study should be carried out to determine whether this apparently equal development of comprehension was due to contaminating influences in this study, or whether it actually represents a developmental trend in young children. Study of this matter would help to determine where the major emphasis of beginning reading instruction should be: on word recognition, or on a combination of recognition and meaning skills. The fact that the Linguistic Group Comprehension mean on the Gilmore was superior to the means of the other two groups emphasizes the need for close study of this matter.

3. Although the average achievement of the sample population in this study was satisfactory in all treatments there were children in all treatments and at all levels of ability who did not make satisfactory progress. These children should be studied to determine if there are specific reading weaknesses that occur more commonly under one treatment than another. These children should be studied further to determine whether some unique learning style of the individual may have contributed to his failure under one approach and whether his likelihood for success might have been greater using a different method. Detailed study of these low achievers could offer insight into more refined ways of predicting the young child's success in reading and ways of more closely fitting beginning instruction in reading to the needs of the individual learner.

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APPENDIX A

Special Tests and Forms Used

San Diego Pupil Attitude Inventory

Directions for Preparing the Writing Sample

Fry Phonetically Regular Word List

Gates Word Pronunciation Test

AN INVENTORY OF READING ATTITUDE

(Standardization Edition)

Name ______________________________ Grade______ Boy Girl
Last First Middle

School______________________ Teacher____________________

Date of Test ____________________
Mo. Day Yr.

TO BOYS AND GIRLS:

This sheet has some questions about reading which can be answered YES or NO. Your answers will show what you usually think about reading. After each question is read to you, circle your answer.

INSTRUCTIONS TO PUPILS

Draw a circle around the word YES or NO, whichever shows your answer.

Sample A

Yes No Do you like to read?

If you like to read, you should have drawn a circle around the word YES in Sample A; if you do not like to read, you should have drawn a circle around the word NO.

Sample B

Yes No Do you read as well as you would like to?

If you read as well as you would like to, you should have drawn a circle around the word YES in Sample B; if not, you should have drawn a circle around the word NO.

Yes No 1. Do you like to read before you go to bed?

Yes No 2. Do you think that you are a poor reader?

Yes No 3. Are you interested in what other people read?

Yes No 4. Do you like to read when your mother and dad are reading?

Yes No 5. Is reading your favorite subject at school?

Yes No 6. If you could do anything you wanted to do, would reading be one of the things you would choose to do?

Yes No 7. Do you think that you are a good reader for your age?

Yes No 8. Do you like to read catalogues?

Yes No 9. Do you think that most things are more fun than reading?

Yes No 10. Do you like to read aloud for other children at school?

Yes No 11. Do you think reading recipes is fun?

Yes No 12. Do you like to tell stories?

Yes No 13. Do you like to read the newspaper?

Yes No 14. Do you like to read all kinds of books at school?

Yes No 15. Do you like to answer questions about things you have read?

Yes No 16. Do you think it is a waste of time to make rhymes with words?

Yes No 17. Do you like to talk about books you have read?

Yes No 18. Does reading make you feel good?

Yes No 19. Do you feel that reading time is the best part of the school day?

Yes No 20. Do you find it hard to write about what you have read?

Yes No 21. Would you like to have more books to read?

Yes No 22. Do you like to read hard books?

Yes No 23. Do you think that there are many beautiful words in poems?

Yes No 24. Do you like to act out stories that you have read in books?

Yes No 25. Do you like to take reading tests?

Supt. of Schools, Dept. of Educ. San Diego County

FRY PHONETICALLY REGULAR WORDS ORAL READING TEST

Child's Name ______________________ Date ______________________

School ______________________ Room __________ Code Number ______

Examiner ______________________ Number of words read correctly ______

1. nap
2. pen
3. hid
4. job
5. rug
6. shade
7. drive
8. joke
9. mule
10. plain
11. hay
12. keen
13. least
14. loan
15. show
16. walk
17. haul
18. jaw
19. soil
20. joy
21. frown
22. trout
23. term
24. curl
25. birch
26. rare
27. star
28. porch
29. smooth
30. shook

Directions: Have pupil read words from one copy while examiner makes another copy. Do not give pupil a second chance but accept immediate self-correction. Let every student try the whole first column. If he gets two words correct from word number six on, let him try the whole second column.

GATES WORD PRONUNCIATION TEST

EXAMINER'S COPY

Directions: Have the child read the words out loud. Tell him you would like him to read some words for you. If he fails the first time, ask him to try the word again. Continue until ten consecutive words have been missed. As the words become difficult, special care should be taken to encourage the child. The score is one point for each word correctly pronounced on the first trial, one-half point for each word correctly pronounced on the second trial. (Note: 9½ correct would be scored as 10.)

---

1. so
2. we
3. as
4. go
5. the
6. not
7. how
8. may
9. king
10. here
11. grow
12. late
13. every
14. about
15. paper
16. blind
17. window
18. family
19. perhaps
20. plaster
21. passenger
22. wander
23. interest
24. chocolate
25. dispute
26. portion
27. conductor
28. brightness
29. intelligent
30. construct
31. position
32. profitable
33. irregular
34. schoolmaster
35. lamentation
36. community
37. satisfactory
38. illustrious
39. superstition
40. affectionate

Child's name: ______________________ Test date ___ ___ ___

Examiner: ______________________ Birth date ___ ___ ___

Age: ________

Second Grade Written Language Measures
USOE Cooperative Research Project

Directions to the Classroom Teacher

General Information

You are being asked to obtain one writing sample from each pupil in your classroom. We wish to emphasize the necessity of following the directions and procedures exactly.

As you realize, many other teachers throughout the nation will also be asked to obtain writing samples from their pupils. It is necessary, therefore, that these samples be obtained in all classrooms at approximately the same time and by following the same directions.

You are requested to obtain the writing sample on the morning of May 23, 1966 (within the ten days of testing, one year from previous year's testing).

Classroom Situation

No attempt should be made to enrich your normal room display through the use of word lists, pictures, dictionaries, etc. The classroom conditions should approximate those normally found in your daily writing activities.

Materials

The writing paper and pencils customarily used in your classroom should be used in obtaining this sample.

Identification

The pupil's name, teacher's name, and the school should be indicated on each pupil's paper.

Teacher Directions to the Pupils

(1) When all have finished writing name, etc., say.... "Now put your pencils down. I am going to read a story about a frog named Hoppy. I want you to listen closely for I am going to omit the ending. When I have finished reading, I want you to take your pencil and tell how you think the story should end."

"You will need to listen very carefully because I can't help you write this story. If you can't spell a word, just write it the way it sounds. Are there any questions?"

(If the question arises about asking for additional paper, tell the children that they may use as much paper as they feel is necessary. When two or three sheets are used, please see to it that they are properly coded and stapled.)

"Ready....Listen....Here is the story."

Hoppy was the most unusual frog that ever lived in Blue Swamp. Hoppy was different because of his color. All of the other frogs had brown skin, but not Hoppy. No, sir, he was a purple frog. He was different, too, because he never worried about anything. Life for Hoppy was just fun, fun, fun. But the thing that really made him different was that he turned somersaults instead of hopping and jumping as the other frogs did. This made the other frogs jealous, but Hoppy did not care. He was having fun.

One day Hoppy was hopping and somersaulting along, having fun like he always did, when he saw Racky, the raccoon, hiding up in a tree.

"Hey, Racky," Hoppy shouted, "what are you doing up in the tree? Why don't you come down and have some fun with me?"

"Oh, no," said Racky, "Willie Crocodile is looking for his supper and I'm staying right here until it's safe to come down."

"Suit yourself," said Hoppy as he hopped along.

Soon he saw Brownie, the mouse, digging a hole in the ground.

"Hey, Brownie," yelled Hoppy, "how come you are digging that hole? Why don't you stop a while and play with me."

"No sir," replied Brownie, "Willie Crocodile is looking for his supper, and I'm going to hide until it's safe to come out again."

"Well, suit yourself," said Hoppy as he hopped along.

By and by, Hoppy met Mr. Owl. He was perched on a limb just above Hoppy's head.

"Oh, no," said Mr. Owl, "it's not safe to be funnin' especially when Willie Crocodile is looking for his supper. You'd better find a place to hide."

"Well, maybe so," replied Hoppy, "but I don't have time to hide, not when I can have fun instead." And he hopped along.

By now Hoppy was feeling real happy. He was jumping higher and higher as he went along. He jumped and turned over and over. Wheeee! He was having fun.

In his excitement, Hoppy didn't notice that Blue Swamp had become very quiet. It wasn't until he stopped to catch his breath that he noticed how quiet things really were. Not even the leaves stirred. He didn't know what to make of it.

Suddenly the silence was broken by a squeeking sound. It was Brownie running along beside him. All he kept saying was, "Run for your life Hoppy! Run!" Then Brownie scurried as fast as he could back to his hole in the ground.

Racky, the raccoon, peeped out through the leaves of the tree he was hiding in. "Yes, yes, you'd better hurry Hoppy."

"Hoot, hoot!" cried Mr. Owl, "Go, Hoppy, go before it's too late."

(2) Upon completion of the reading say....

"That's as much of the story as I can tell you. Now you tell me what you think happened."

(3) Once the children begin to write, begin timing them. They have twenty (20) minutes writing time. Stop them at the end of twenty (20) minutes. Children who finish ahead of time may go on to something else. Their papers should be collected upon finishing. Please try to keep those who finish early from interrupting those who are still writing. At the end of twenty (20) minutes writing.... say "Please stop writing."

It is particularly cautioned that no specific titles be presented, nor should picture or other stimuli be employed.

Other Procedures

No spelling help should be provided during the writing period. If pupils request spelling assistance, they should be told to try to spell the word and then encouraged to proceed.

If pupils normally use a simplified dictionary or write from display flash cards or use a speller, such practices may be allowed.

Under no circumstances, however, should you correct misspellings, give ideas, or assist the pupils beyond the point of general encouragement.

Time Limit

Following the heading of the paper, 20 minutes should be allowed for the pupils to finish their stories. Papers of pupils who finish early should be inconspicuously collected and a coloring exercise or a similar silent activity should be provided for the remainder of the twenty minutes.

Written Sample Identification

At the end of twenty minutes, all stories should be collected, packaged, and clearly labeled:

WRITING SAMPLE (Date May 23, 1966)

You are not to correct these stories: they will be corrected and scored by the Project Director's Staff who will apprise you of the correction procedures should you desire this information.

END

DEPT. OF HEALTH
EDUCATION AND
WELFARE

U.S. OFFICE OF
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